Botanical Diversity of the Pleistocene Forest Refuge Monts Doudou

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To improve our knowledge of the flora and vegetation of the Monts Doudou Reserve within the context of the development of a management plan, the National Herbarium of Gabon has performed two types of research: a general botanical inventory and a botanical plot inventory. Within the Monts Doudou Reserve the following vegetation types can be recognized: savannah, dry land lowland forest, lowland swamp forest, gallery forest, medium altitude forest and high altitude forest. The number of botanical specimens collected in the Reserve was 2459, representing 991 different species. Besides, 5 species endemic to the Monts Doudou have been identified; 9 others have a very limited distribution in the southwest of Gabon. A percentage of 11% of the observed species is endemic to the zone (surface area of distribution less then 150,000 km^2). The hypothesis that Monts Doudou represents a former Pleistocene forest refuge is approved and strengthened. A biodiversity analysis based upon 11 families shows that the zones with a very high botanical biodiversity are situated at medium and high altitude. A positive correlation has been demonstrated between altitude and vegetation diversity (species number and number of stems per surface unit), which is true for the woody flora as well as for the numerous non-woody species. Complementary botanical inventories of the high altitude zones of the Monts Doudou are strongly recommended.

RÉSUMÉ

Pour améliorer notre connaissance de la flore et la végétation de la Réserve des Monts Doudou dans le cadre du développement d'un plan d'aménagement, l'Herbier National du Gabon a exécuté deux types de recherches: un inventaire botanique général et un inventaire botanique par parcelles. Dans les Monts Doudou, on peut reconnnaître les formations végétales suivantes: savanes, forêt de basse altitude en terre ferme, forêt de basse altitude marécageuse, forêt galeries, forêt de moyen altitude et forêt de haute altitude. Le nombre d'échantillons botaniques récoltés dans la Réserve est évalué à 2459, et ceux-ci représentent 991 espèces différentes. Par ailleurs, on a identifié 5 espèces de plantes limitées aux Monts Doudou; 9 autres de distribution très limitée dans le Sud-Ouest du Gabon. Un taux de 11% des espèces observées est endémique pour la zone (surface de l'aire de distribution de moins de 150,000 km^2). L'hypothèse selon laquelle les Monts Doudou représentent un ancien refuge forestier du Pléistocène, est approuvée et renforcée. Une analyse de la biodiversité à partir de 11 familles montre que les zones ayant une biodiversité

botanique très élevée se trouvent en moyenne et haute altitude. Une corrélation positive a été montrée entre l'altitude et la diversité de la végétation (nombre d'espèces et pieds par unité de surface), et cela est d'autant plus vrai pour la flore ligneuse que pour les nombreuses espèces non ligneuses. Des inventaires botaniques complémentaires des zones de haute altitude des Monts Doudou sont vivement recommandés.

Introduction

A thorough knowledge of the flora of a certain region acts as an indispensable basis for all other environmental research, including ecological studies, forestry, economic botany, and issues of conservation and management. Although Gabon, with an estimated total of 7000 plant species, possesses a tropical lowland flora known to be the richest in all of Africa (Breteler 1996), unfortunately we must note that its flora is at the same time among the least well-known ones, and much remains to be done. At the national level there are numerous regions within Gabon that are imperfectly or not at all known botanically, because of a largely insufficient number of botanical collections. [An estimated total of only 70,000 specimens (Breteler 1996) was collected in this country that has a surface of 262,000 km^2.] The Monts Doudou were amongst these imperfectly known areas, with only about 1200 botanical collections.

In order to draw up a proper management plan for the Reserve, it was recognized that a more detailed knowledge of the flora in general, the types of vegetation, and the distribution of botanical diversity within the reserve was desirable. The National Herbarium of Gabon was approached to perform such studies, which led to the present results. Two different types of research were performed: firstly, a general botanical inventory, and secondly an inventory of small plots. In both, the question whether altitude was related to botanical diversity was addressed.

Objectives

General botanical inventory

In the past, the Monts Doudou have been visited by several botanists, most notably Dutch (see Table 2), who made 1235 herbarium collections. Before the present project started, data on only a few hundred of these collections were available in the database kept at the National Herbarium of Gabon.

The Monts Doudou have a surface area of 3320 km^2. An average of 2 collections per square kilometer is a figure generally accepted by botanists to consider a tropical region as being "botanically well-known" (Campbell and Hammond 1989). With the present means and work program it was impossible to arrive at the preferred number of approximately 6,500 collections for the Monts Doudou, but our aim was to at least double the number of available plant collections. With a total of around 2,500 collections, the Monts Doudou would enter the category of "botanically fairly well-known," which is acceptable for the moment.

Besides that, the following four objectives were formulated for the general botanical inventory: 1. To arrive at a species list for the Monts Doudou Reserve; 2. To develop a standardized method of botanical diversity analysis; 3. To investigate the relationship between altitude and botanical diversity; 4. To indicate the most important localities in terms of botanical diversity conservation.

Plot inventory

The objective of the botanical inventory of small plots was to obtain information on forest vegetation composition, and on botanical diversity as a function of altitude. This would allow a comparison between our data and those obtained by other, mainly zoological, researchers, who performed their research within the context of the same project.

Before the actual inventory, the National Herbarium of Gabon foresaw the verification of a correlation between botanical diversity and the different vegetation types of the Monts Doudou, as given on an existing vegetation map. Unfortunately, this map proved not to be detailed enough (primary forest divided into "accessible forest" and "inaccessible forest") for this type of analyses.

Methods

General botanical inventory

Planning of the missions. Using the existing vegetation map and given the possibilities offered by road conditions and logistics, the localities to be visited were identified. To obtain a maximum of botanical diversity information, these sites were well distributed among the various vegetation types. We identified six different vegetations to be visited: "dry savannah," "riverine forest," "lowland forest on dry land," "lowland swamp forest," "mid-altitude forest," and "high-altitude forest."

In order to locate as many species as possible in their fertile state (with flowers or fruits), it was decided to distribute the various missions well throughout the project period.

Biodiversity analysis. The term "biodiversity" is a complex one. The biodiversity of a certain region is often expressed by the number of species present. Because this simple formula is often not satisfactory (a given region may comprise a similar number of species than another one, but with a much higher percentage of rare species), researchers have developed other indexes. These indexes often imply the definition of categories of species rarity and/or threat. The most well known of these is probably that of the IUCN (IUCN, 1994), serving as a basis for most of the "Red Data Lists."

In Gabon, the level of our botanical knowledge is, unfortunately, still too low for the application of the IUCN categories. Another, more simple and coarse, system has been developed for Ghana by W. D. Hawthorne (Hawthorne and Abu Juam 1995) and was tested and adapted during several field studies in Ghana. It is this system that the National Herbarium of Gabon has adapted for Gabon within the context of the present project. A total of nine rarity categories have been defined, each with its own biodiversity value (Table 1). For this biodiversity analysis we have chosen 11 plant families with a significant number of species occurring in Gabon and botanically more or less well-known.

Indicator species for a Pleistocene forest refuge. In the past, a group of *Begonia* species (sections *Loasibegonia* A.DC. and *Scutobegonia* Warb.) were identified as indicators for the presence of a forest refuge during the Pleistocene (Sosef 1994). During the botanical inventories, these species were given special attention as their presence may strengthen the hypothesis that the Monts Doudou represent a former forest refuge area.

Plot inventory

To collect data on vegetation composition and species diversity we have established plots of 40 × 40 m. Within these plots all trees with a stem diameter of 10 cm and over were taken into account; the species name and the number of stems present per species were

TABLE 1. Review of rarity categories and their attributed biodiversity values.

Category	Distribution	Rarity within distribution area	Biodiversity value
1A	Endemic species with a very limited distribution (< 150,000 km^2). Gabon has a strong responsibility regarding the protection of this species.	Rare	81
1B	Same distribution	Common or fairly common	27
2A	Species limited to Lower Guinea (biogeographic region recognized by White (1979) that extends from southeast Nigeria to the west of the Democratic Republic of Congo). Gabon has a certain responsibility regarding the protection of this species.	Rare	27
2B	Same distribution	Common or fairly common	9
3A	Species limited to Upper Guinea and Lower Guinea (Liberia to the west of the Democratic Republic of Congo) or limited to Lower Guinea and Congolia (southeast Nigeria to the east of the Democratic Republic of Congo, Rwanda, and Burundi). Paying attention to the protection of this species may be favorable for Gabon.	Rare	9
3B	Same distribution	Common or fairly common	3
4A	Species limited to Lower Guinea, Congolia, and East Africa, or to Upper Guinea, Lower Guinea, and Congolia.	Rare	3
4B	Same distribution	Common or fairly common	1
5	Species with a larger distribution area	–	1

noted down. From these data, we obtained for each of the plots: the number of tree families, the total number of tree species, the average number of tree species per family, and the total number of stems. The objective was to establish at least 15 plots, so as to arrive at a total surface of about 2.5 hectare. Because we wanted to study the relation of various parameters with altitude, the plots were chosen so as to represent a wide range of altitudes.

Similar to the zoological research, three altitudinal zones were defined:

Low altitude: < 200 m

Medium altitude: 200–450 m

High altitude: > 450 m

The objective was to establish at least five plots per altitudinal zone.

Within each 40 × 40 m plot, a subplot of 10 × 10 m was selected in which the presence of every plant species was recorded. A reference herbarium specimen was collected for almost every species encountered.

Differences between the plot means per altitudinal zone were tested on significance using one way ANOVAs and Tukey-Kramer HSD multiple comparison tests in Jump 3.1.4 (SAS Institute Inc., NC, USA).

The actual correlations of plot altitude with number of tree families, total number of tree species, number of tree species per family, number of stems (all in the 40 × 40 plots), and total number of species (in the 10 × 10 plots) were examined using regression analyses. The analyses were performed in Excel 97 (Microsoft Corporation, USA). Pearson's correlation coefficients corresponding to the regression lines were calculated and tested on significance using Jump 3.1.4.

Results and Analyses

General botanical inventory

Realization of the missions. Botanical collections were gathered during the following periods:

16–27 March 2000
4–19 April 2000
14 May–4 June 2000
14–27 September 2000

Figure 1 shows the location of all visited sites. Because the exact boundaries of the Monts Doudou Reserve were not known at the start, and even changed during the project, some of these localities are situated outside the actual reserve.

The available collections. During the field missions 1286 collections were gathered, 1254 inside the Monts Doudou Reserve. Data on all these collections were entered in the database of the National Herbarium of Gabon, using the BRAHMS software (Filer 1999). In general, each collection comprised four or five duplicates to be distributed to other herbaria in Africa, Europe, and the United States.

At the start of the present project, data on 232 collections from the Monts Doudou Reserve were already available from the database. The Biosystematics Group (Wageningen University, The Netherlands), one of the principle partners of the National Herbarium, provided photocopies of field annotations and identifications of 1099 collections gathered from the Monts Doudou. They were all entered within the context of this project. Data on another 106 collections originating from the Monts Doudou were supplied by the Missouri Botanical Garden (St. Louis, United States), another partner of the National Herbarium. Lee White (World Conservation Society, Lopé Reserve, Gabon) put data on another 33 collections at our disposition. The latter, however, were not yet identified down to species level and were therefore not taken into consideration.

At present, a total of 2459 botanical collections relating to the biodiversity of the Monts Doudou are recorded in our database. To make a geographical selection of the data, we have used the limits of the nine rectangles presented in Figure 2. Below, a synoptic table concerning these collections is given (Table 2).

During the inventory of the subplots, around 400 reference samples were collected. After being analyzed, most of these will be incorporated in the collection of the National Herbarium as well. Consequently, we may conclude that our objective to arrive at a total of about 2500 collections for the Monts Doudou has been met with, and that this number will soon be exceeded.

The distribution of the 2459 botanical collections within the Monts Doudou Reserve is presented in Figure 3.

Identification of the collections. Personnel of the National Herbarium have identified the majority of the new collections. About a third were identified by specialists of Wageningen University and by G. Achoundong (National Herbarium of Cameroon,

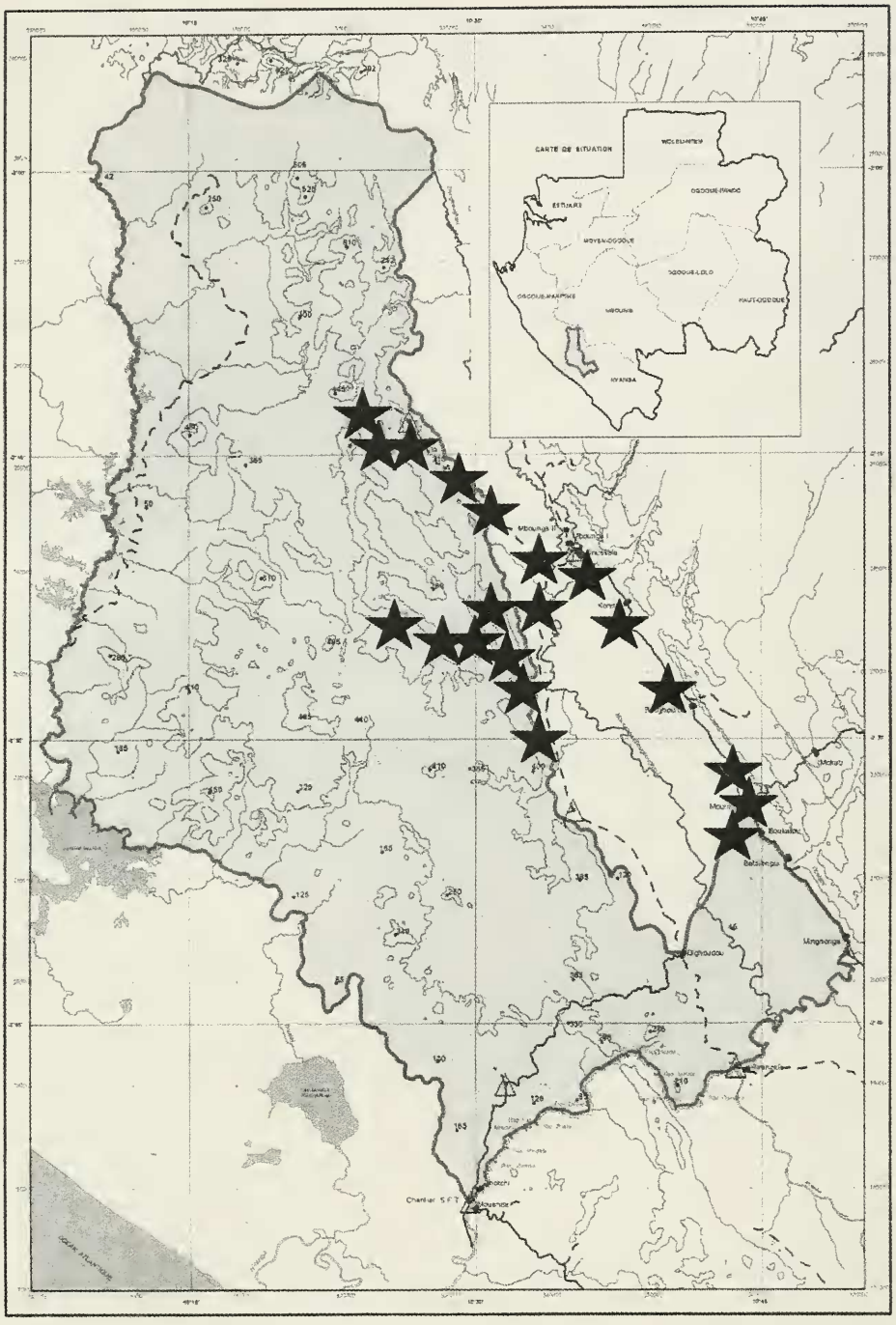

FIGURE 1. Sites where botanical specimens were collected during the project.

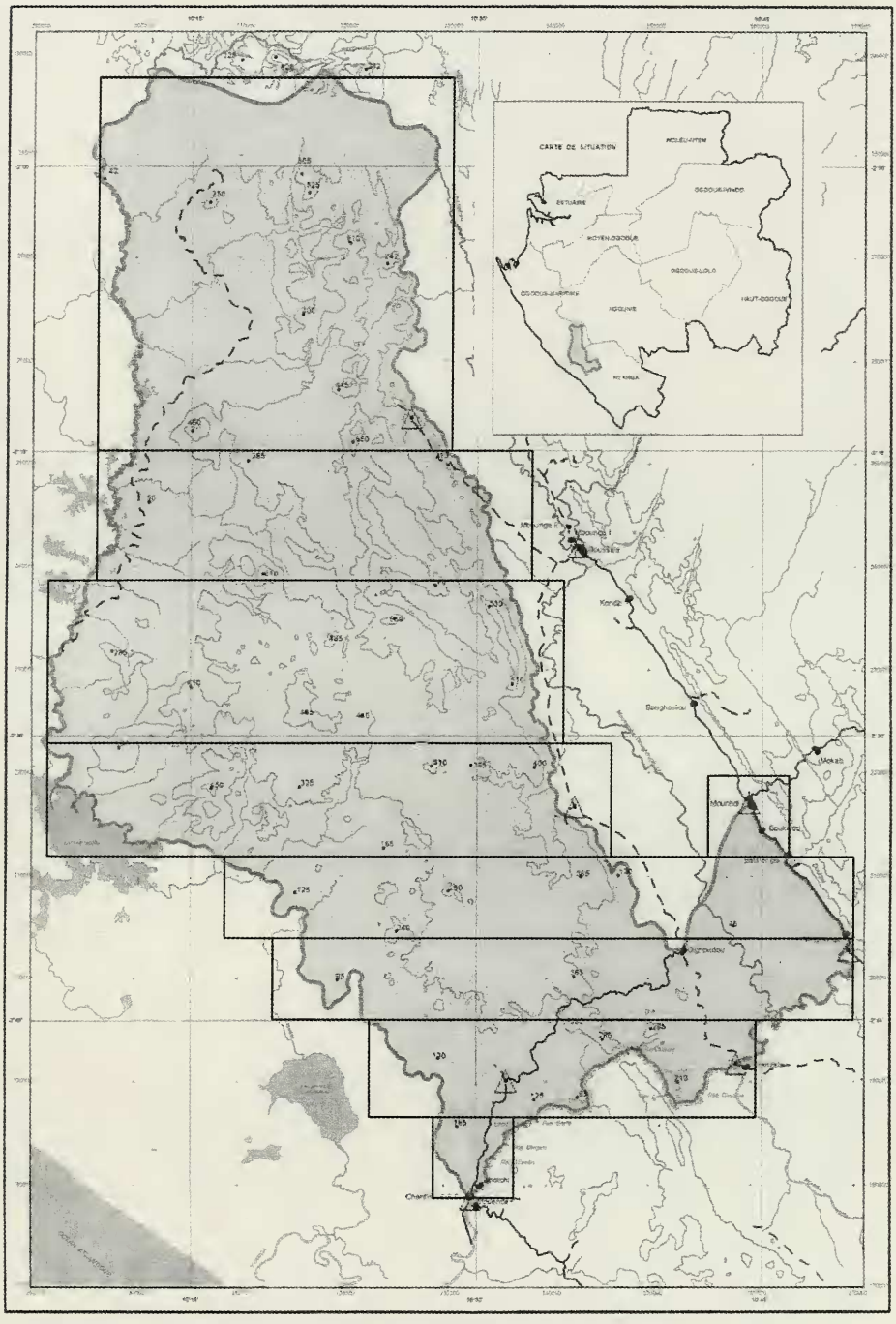

FIGURE 2. The nine rectangles used to select the data related to botanical collections.

TABLE 2. Overview of all available botanical collections (2459) of the Monts Doudou Reserve.

Collector	Number of collections	Collecting date
J. C. Arends et al.	118	Dec 1984
M. A. van Bergen et al.	14	Jan. 1996
H. P. Bourobou Bourobou et al.	283	Sept. 2000
J. J. Dibata	6	?
Y. Issembé et al.	125	May-June 2000
A.M. Louis	1	Oct. 1986
G. McPherson	81	May 1997
J. M. Reitsma et al.	589	May 1985–April 1987
M. S. M. Sosef et al.	846	March–Sept. 2000
J. J. F.E. de Wilde et al.	375	Nov.–Dec. 1986, March 1988
C. Wilks	21	April 1987

Yaoundé). Within the framework of this project, F. J. Breteler (Wageningen University), the world specialist on the flora of Gabon, could stay at the National Herbarium of Gabon for 3 weeks and has been a great help in identifying our specimens.

A total of about 75% of the new collections have been identified to species level. The remaining were identified at genus or family level and await the availability of specialists who can further identify them.

The species concerned. A complete list of all species presently known to occur within the Monts Doudou has been added as Appendix A. This list shows a total of 991 different species (806 Dicots in 92 families, 131 Monocots in 14 families, and 54 ferns in 18 families).

Among these species, 5 are endemic to the Monts Doudou, and another 9 have a very restricted distribution in southwestern Gabon (and neighboring western Congo-Brazzaville). The most remarkable species and discoveries are listed below:

Adhatoda le-testui (Acanthaceae): endemic species with a very limited distribution in southwestern Gabon;

Anthonotha trunciflora (Caesalpiniaceae): rare species, known only from the coastal zone of Gabon;

Begonia dewildei (Begoniaceae): species endemic to the Monts Doudou; we have located another population of this rare species;

Begonia gabonensis (Begoniaceae): recently discovered species endemic to the Monts de Cristal and the Monts Doudou;

Begonia sp. nov. ? (Begoniaceae): probably a new species, close to *Begonia scutulum*, but we need more material to exclude the possibility that the population is of hybrid origin;

Calpocalyx brevifolius (Mimosaceae): recently discovered species and known only from around Tchibanga and the Rabi-Kounga area;

Cincinnobotrys acaulis (Melastomataceae): first record for Gabon; previously known from the south of the RDC, northern Angola and Zambia;

Commitheca letestuana (Rubiaceae): rare species, endemic to southern Gabon;

Connarus longestipitatus (Connaraceae): first record of this species for Gabon;

Costus nudicaulis (Zingiberaceae): rare species, endemic to Gabon;

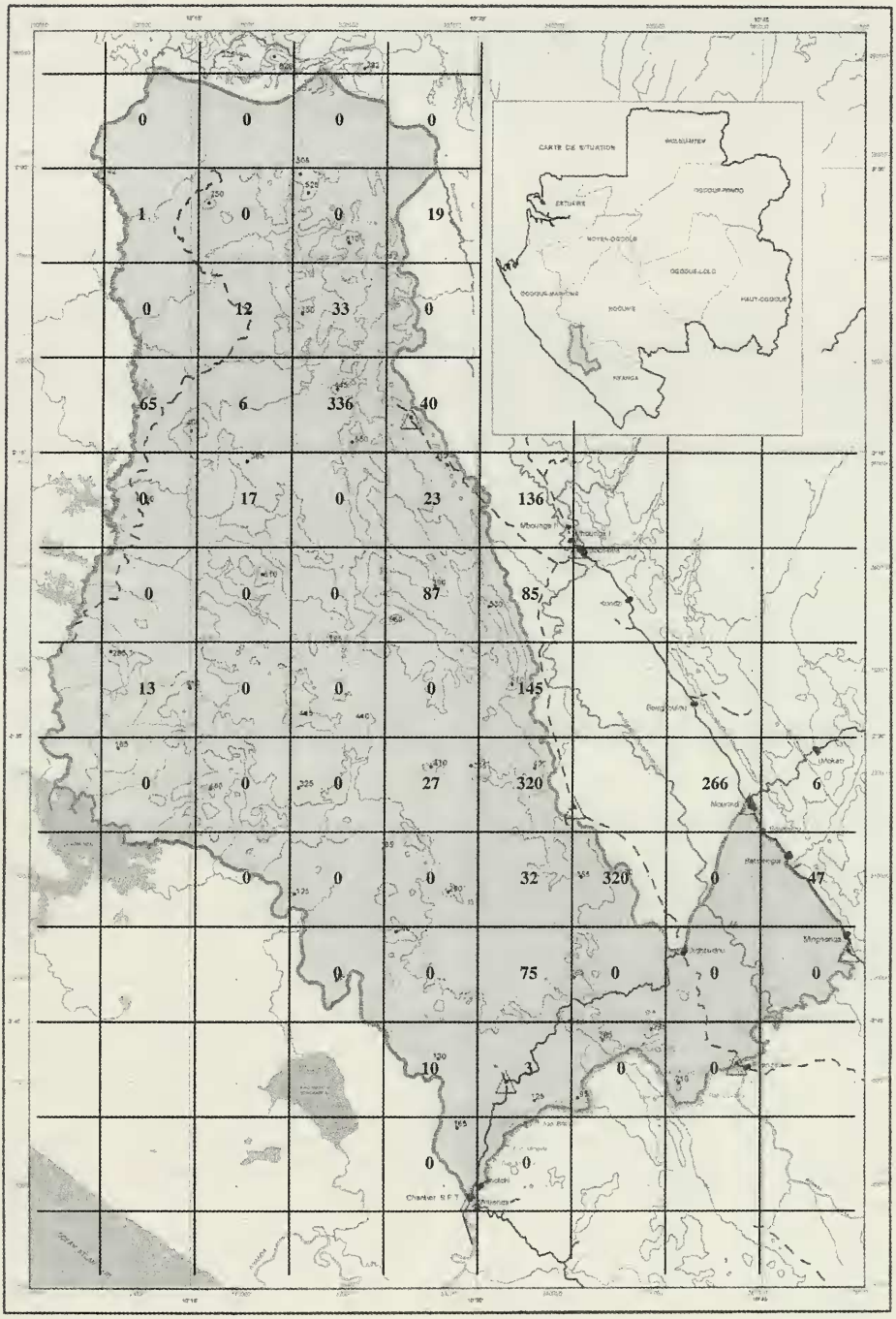

FIGURE 3. The distribution of the 2459 botanical collections within the Monts Doudou Reserve.

Cynometra nyangensis (Caesalpiniaceae): previously known from a single collection by Le Testu around Tchibanga at the beginning of the 20th century;

Dichapetalum sp. nov. (Dichapetalaceae): new species yet to be described, recognised by the specialist F. J. Breteler. A second collection appeared to be present in our herbarium, collected in the Monts Doudou Reserve by Reitsma some 15 years ago.

Elaeophorbia drupifera (Euphorbiaceae): rare species, only known from southern Gabon and western Congo-Brazzaville.

Impatiens floretii (Balsaminaceae): species endemic to the Monts Doudou Reserve;

Isomacrolobium conchyliophorum (Caesalpiniaceae): rare species, endemic to southern Gabon;

Memecylon salicifolium (Melastomataceae): recently discovered species, previously known from some collections around Bélinga (northeastern Gabon);

Saintpauliopsis lebrunii (Acanthaceae): first record of this species for Gabon (but recently also collected on Mount Iboundji); rare species known from Central and East Africa;

Schumanniophyton hirsutum (Rubiaceae): first record of this species for Gabon; species known from Congo-Brazzaville, Angola (Cabinda) and the RDC;

Tapura letestui (Dichapetalaceae): rare species, known only from southwestern Gabon and western Congo-Brazzaville;

Tarenna jolinonii (Rubiaceae): rare species, endemic to Gabon;

Trichoscypha gambana (Anacardiaceae): recently discovered species, only known from the region Gamba-Rabi-Monts Doudou;

Trichostephanus gabonensis (Flacourtiaceae): recently discovered species, endemic to the Monts Doudou;

Tristemma vestitum (Melastomataceae): recently discovered species, previously known from a single collection originating from northwestern Gabon;

Warneckea cauliflora (Melastomataceae): rare species, endemic to southern Gabon and western Congo-Brazzaville.

Biodiversity analysis

A complete biodiversity analysis for the 11 selected families is given in Appendix B. These 11 families correspond to 259 species, which is 26.1% of the total number of species as given in Appendix A.

Table 3 shows the number of species and biodiversity values per family. The total and mean biodiversity values may be compared later on with data obtained from other regions within Gabon, to show the relative importance of the Monts Doudou. Because the method has been recently developed, such a comparison is not yet possible to date.

Four families show a high percentage of rare species: the Balsaminaceae, Begoniaceae, Dichapetalaceae and Melastomataceae. It is remarkable that within the Monts Doudou the Connaraceae and the Orchidaceae are apparently represented by common or fairly common species (see Appendix B for more details).

Furthermore, we would like to know how these biodiversity values are distributed in relation to altitude. Table 4 shows the results of this analysis. Unfortunately, some of the older collections (291 in total) could not be taken into consideration, because the altitude at which they were collected is unknown.

While trying to analyze the figures in Table 4, we noticed that it was only logical to look at the total biodiversity value *in relation to* the number of species (so the mean

TABLE 3. Summary of the number of species and biodiversity values per family.

Family	Number of species	Total biodiversity value	Mean biodiversity value
Acanthaceae	27	187	6.93
Apocynaceae	29	255	8.79
Balsaminaceae	5	121	24.20
Begoniaceae	24	358	14.92
Caesalpinaceae	56	582	10.39
Combretaceae	8	40	5.00
Connaraceae	17	39	2.29
Dichapetalaceae	17	227	13.35
Mimosaceae	19	140	7.37
Melastomataceae	29	508	17.52
Orchidaceae	28	70	2.50
Total	259	2527	9.76

biodiversity value) *and* to the number of collections made per zone. The mean biodiversity value gives an indication of the percentage of rare species encountered, whereas the number of collections is indicative of the thoroughness of the inventory (of the altitudinal zone concerned), and therefore for the likelihood that the total biodiversity value will still increase after additional collecting efforts. We should realize that this could be seen as a drawback of the present methodology: the total biodiversity value can hardly serve as a figure on its own, and should be studied in relation to other data.

Taking into account all data in Table 4, we may conclude that the altitudinal zone of 300 to 700 m is clearly the richest part of the Monts Doudou. Furthermore, it is most likely that a more thorough inventory of the zone above 500 m will yield many more rare species. Following such inventory work, the total biodiversity value of this zone will increase, probably even beyond that of the 400–499-meter zone. It is remarkable that the 500–599-meter zone appears to be the zone with the highest percentage of rare species, but still has very few collections. Could this be explained by a sampling methodology? Is a botanist, struggling on her/his way to the summit, reluctant to stop and collect anything, except when it appears to be something special?

TABLE 4. Analysis of the distribution of biodiversity values in relation to altitude, and the number of collections per altitudinal zone. Rare species refer to rarity categories 1A, 1B, and 2A.

Altitude (m)	Number of species	Number of rare species	Total biodiversity value	Mean biodiversity value	Number of collections
0–99	16	1	106	6.62	128
100–199	87	5	465	5.34	711
200–299	61	4	435	7.13	366
300–399	44	7	437	9.93	232
400–499	61	9	711	10.50	444
500–599	45	7	505	11.22	128
600–700	49	8	453	9.24	161

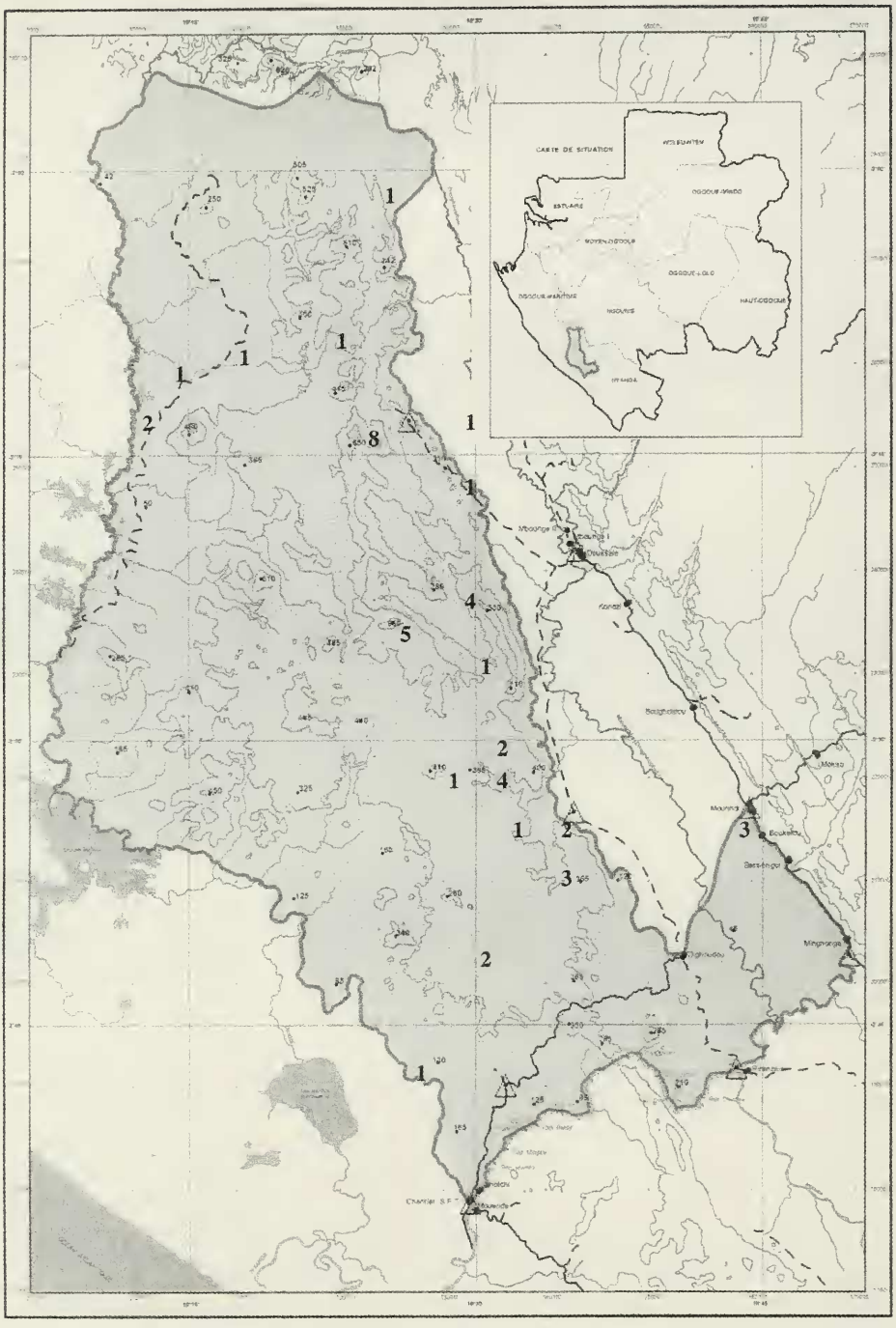

FIGURE 4. Distribution of the number of endemic and rare species (categories 1A, 1B, and 2 A) at specific sites.

Figure 4 shows the specific localities with concentrations of rare species, hence the sites with highest biodiversity figures. Clearly, the two hills that were visited (Mont Pongou at 2°14′S, 10°23′E, and Mont Mougoubi at 2°24′S, 10°26′E) are the richest sites. This even notwithstanding the fact that the last one has not been well inventoried because of a lack of time and a visit during an inappropriate season.

In fact, from these data it seems plausible that the whole chain of hills running from the north to the south, is inhabited by rare or endemic species. It will definitely be worthwhile to return to those hills to collect additional botanical information.

Within the 11 families studied in detail, 29 endemic species (category 1A or 1B) were observed. Thus by extrapolation we may state that around 11% of the plant species of the Monts Doudou are endemic to the region. Considering the fact that the more common species have a higher chance of being collected than the rarer ones, we assume new inventory activities will add comparatively many rarer species to the species list. Therefore, we assume that the figure of 11% will increase in the future.

The Pleistocene forest refuge indicators. Sosef (1994) had noted the presence of seven species of *Begonia* (*B. clypeifolia*, *B. dewildei*, *B. hirsutula, B. lacunosa, B. mildbraedii, B. scutulum* and *B. vankerckhovenii*) occurring in the Monts Doudou Reserve, and which are recognized as indicators of a Pleistocene forest refuge. The presence of these seven species was a sufficiently strong indication to denote the Monts Doudou area as a former rain forest refuge.

During the present fieldwork, we have identified another two indicator species: *Begonia letouzeyi* and *Begonia scutifolia*. Another collection of *Begonia* may well represent an undescribed new species. (More material is needed, however, to exclude the possibility that the material originated from a hybrid population.) These new discoveries strengthen the hypothesis of the existence of a rain forest refuge at the Monts Doudou during the Pleistocene.

Plot inventory

Realization of the plots. In total, 18 plots have been established. All plots were situated in primary forest vegetation, seven in the low altitude zone, six in the medium altitude zone, and five in the high altitude zone. Table 5 shows the location and altitude of each plot.

All data concerning the plot inventory are presented in Appendix C. The majority of the reference samples of the subplot inventory (mostly sterile) have not yet been identified due to a lack of time and human capacity. Therefore, we only present results concerning the total number of different species in the subplots.

Comparative analyses of the plots. Table 6 shows the averaged results of the plots and subplots at the three altitudinal zones. The ANOVA showed significant differences among the plot means for number of tree families ($P = 0.0129$), number of tree species ($P = 0.0112$), and number of stems ($P = 0.0132$) at different altitude zones. The multiple comparison tests showed that for all three parameters only the differences between the low altitude plots and high altitude plots are significant. The plot means of the medium altitude plots are not significantly different from the low and high altitude plot means ($\alpha = 0.05$). The number of tree species per family in the plots and the number of species in the subplots are not significantly different for the plots at different altitudes ($P = 0.8334$ and $P = 0.1113$, respectively).

Figure 5 depicts the results of the individual plots and subplots, showing an increasing gradient of the number of families, species, and stems in relation to altitude. The relation

TABLE 5. Location and altitude of each plot.

Plot	Latitude and longitude	Altitude (m)
1	2°17′S, 10°30′E	100
2	2°17′S, 10°30′E	100
3	2°14′S, 10°27′E	150
4	2°17.6′S, 10°30.3′E	150
5	2°13′S, 10°24′E	380
6	2°13′S, 10°24′E	460
7	2°14′S, 10°24′E	650
8	2°13′S, 10°24′E	350
9	2°27.6′S, 10°32′E	195
10	2°27.4′S, 10°32′E	535
11	2°27.4′S, 10°32.1′E	430
12	2°28′S, 10°32′E	145
13	2°27.6′S, 10°32.5′E	265
14	2°28.0′S, 10°32.5′E	150
15	2°23.1′S, 10°30.7′E	545
16	2°24.4′S, 10°27.1′E	655
17	2°22.5′S, 10°28.8′E	225
18	2°23.0′S, 10°29.5′E	230

between altitude and all variables was well explained by linear relationships. Tests showed that curvilinear relationships did not add much explanatory power (results not shown). The linear relationships indicate that the numbers of families and species increase with altitude, with the highest numbers at the highest altitudes (see also Table 6). These results do not confirm those obtained from the biodiversity analysis (Table 4), which indicated that the highest biodiversity values are found between 400 and 600 m, decreasing again between 600 and 700 m. The decreasing biodiversity at high altitudes shown in Table 4 is probably due to sampling error, as was already explained in the biodiversity analysis section. A more representative sampling will probably also show an increase of biodiversity at the highest altitudes, in accordance with the results of the plot inventory presented in Table 6 and Figure 5.

The correlations of altitude with number of tree families in the plots ($r = 0.58$), number of tree species in the plots ($r = 0.60$), number of stems in the plots ($r = 0.60$), and number of species in the subplots ($r = 0.54$) are significant at the 5% level ($P = 0.0115$, $P = 0.0085$, $P =$

TABLE 6. Means and standard errors of the means of numbers of families, species, and stems per altitudinal zone.

	Low altitude < 200 m	Medium altitude 200–450 m	High altitude > 450 m
Tree families (plot)	15.0 ± 1.35	16.2 ± 0.83	20.4 ± 0.93
Tree species (plot)	27.3 ± 2.59	31.8 ± 1.99	38.6 ± 1.66
Tree species/Family (plot)	1.866 ± 0.184	1.97 ± 0.080	1.89 ± 0.036
Stems (plot)	73.9 ± 7.99	92.0 ± 4.89	105.2 ± 4.49
All species (subplot)	64.4 ± 2.55	74.0 ± 12.39	89.2 ± 4.43

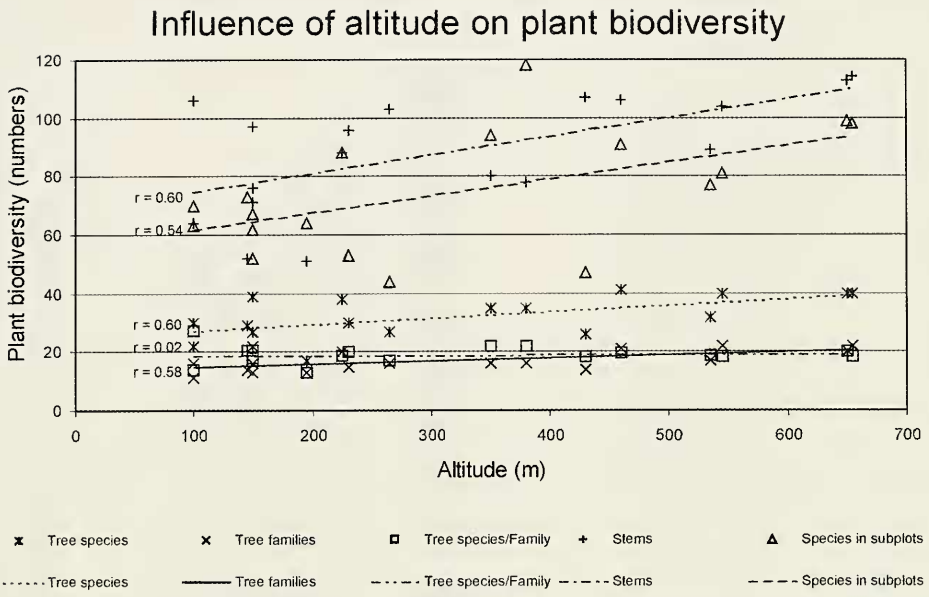

FIGURE 5. Correlations of plot altitude and numbers of tree families, tree species, tree species / family, stems, and species in the subplots.

0.0078, and P = 0.0215, respectively). The correlation of altitude with mean number of tree species per family is not significant (r = 0.02, P = 0.9383). This means that the number of tree species in the plots is significantly increasing with the altitude, but that the effect is caused by a significant increase in the number of tree families, while the number of tree species per family remains constant. Note that although the mean species number for the subplots (Table 6) is not significantly different between the altitude zones, the overall correlation of altitude and species number in the subplots is significant.

To study differences in species composition and/or dominance between the altitudinal zones, we calculated the total number of stems of the more common species for each zone. To eliminate the effect of local dominance, we only took species into account that were encountered in at least two different plots at a given altitudinal zone. Furthermore, we made an overview of the total number of tree species per family for every altitudinal zone. The results are shown in Figures 6 to 11, and discussed below.

Considering the diagrams giving the number of tree species per family (Figures 7, 9 and 11), we observe that two families (Caesalpiniaceae and Euphorbiaceae) are well represented in all three zones. Caesalpiniaceae is dominant in the canopy. The understory, however, is frequented by *Dichostemma glaucescens* (Euphorbiaceae), *Santiria trimera* (Burseraceae), various *Diospyros* (Ebenaceae) species, and Olacaceae such as *Diogoa zenkeri, Strombosia pustulata* and *Strombosiopsis tetrandra,* as can be derived from Figures 6, 8, and 10.

At low altitude, the canopy is dominated by Caesalpiniaceae and Mimosaceae, with species such as *Dialium angolense* and *Pentaclethra eetveldeana.* In the understory *Dichostemma glaucescens*, *Meiocarpidium lepidotum*, and a large variety of *Diospyros* species are frequently encountered.

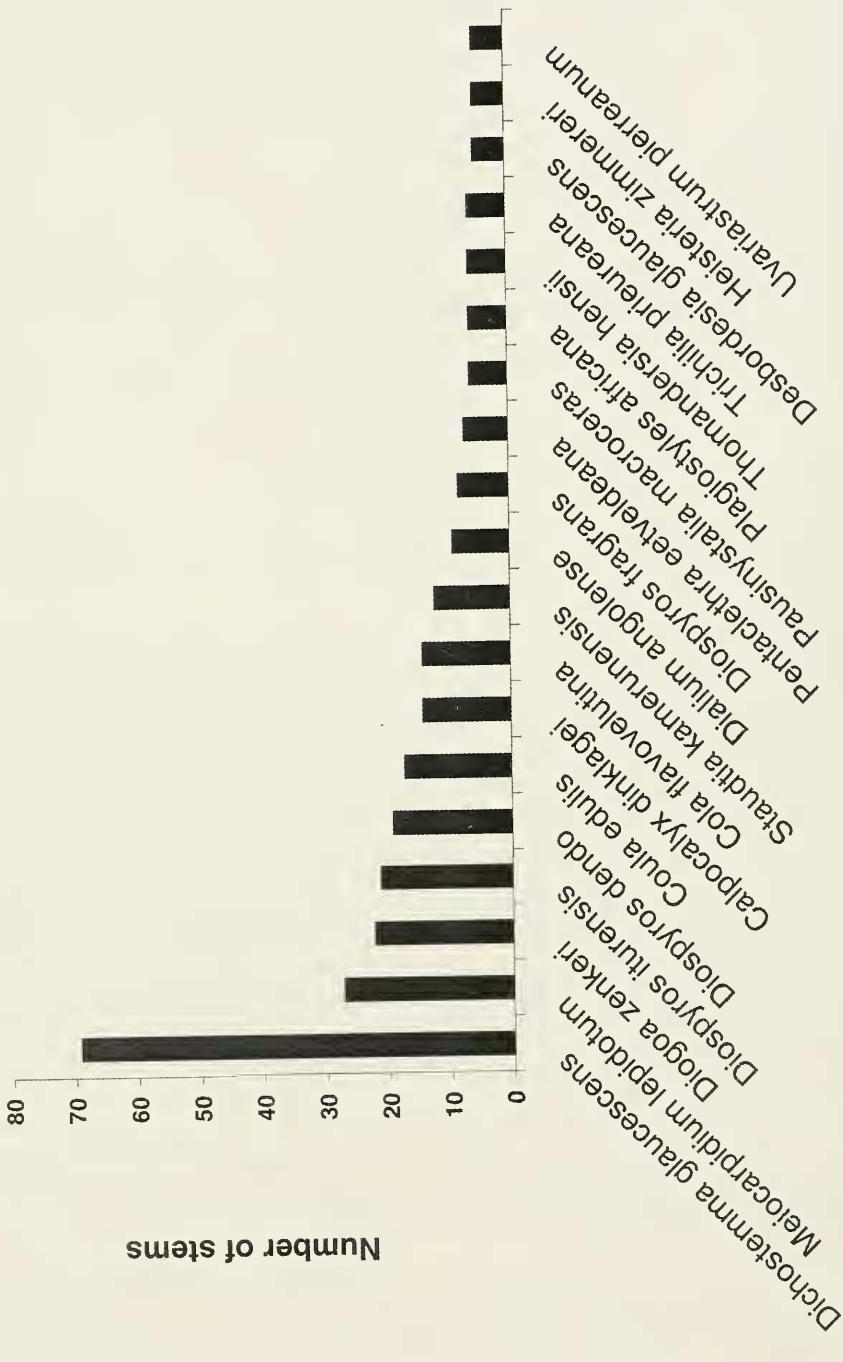

FIGURE 6. Total number of stems for the most common tree species at low altitude (<200 m; cumulative data from plots 1, 2, 3, 4, 9, 12 and 14).

FIGURE 7. Number of tree species per family at low altitude (<200 m; cumulative data from plots 1, 2, 3, 4, 9, 12 and 14).

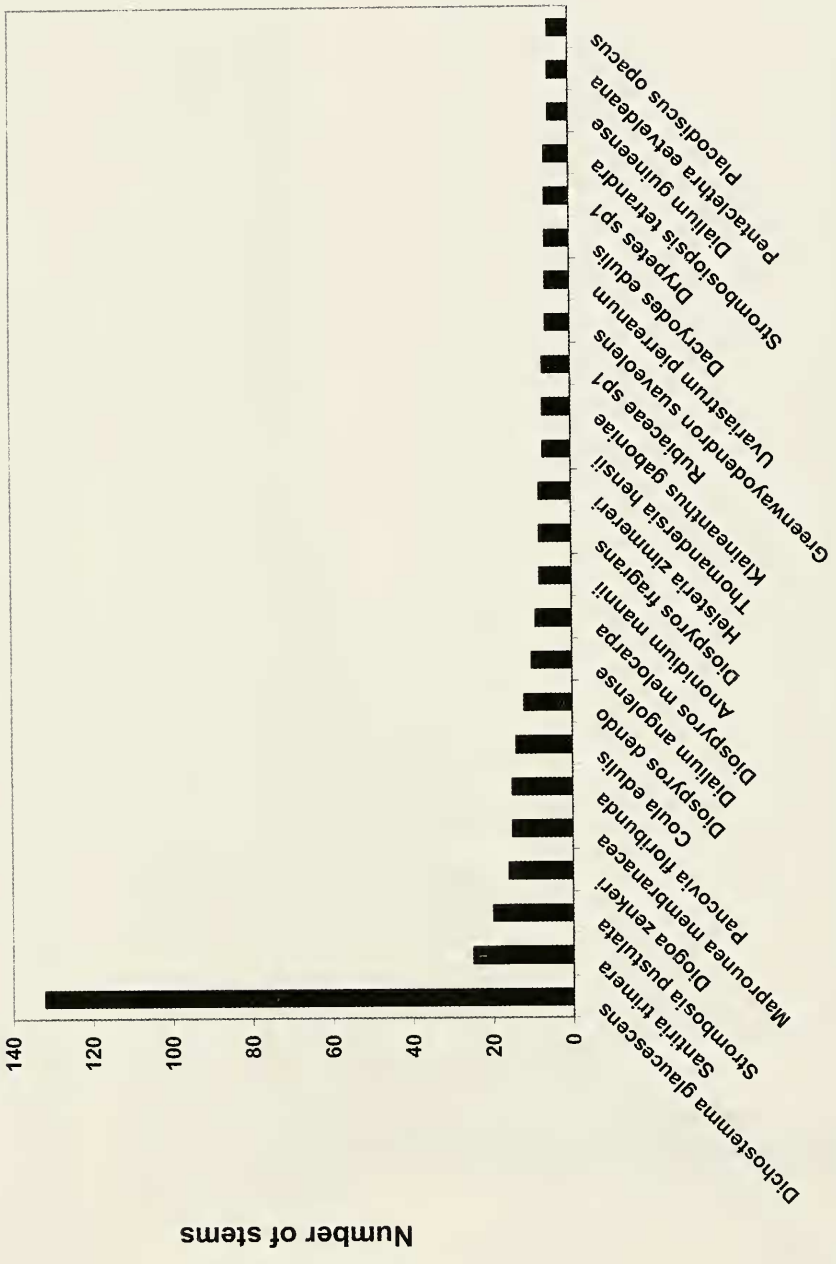

FIGURE 8. Total number of stems for the most common tree species at medium altitude (200–400 m; cumulative data from plots 5, 8, 11, 13, 17 and 18).

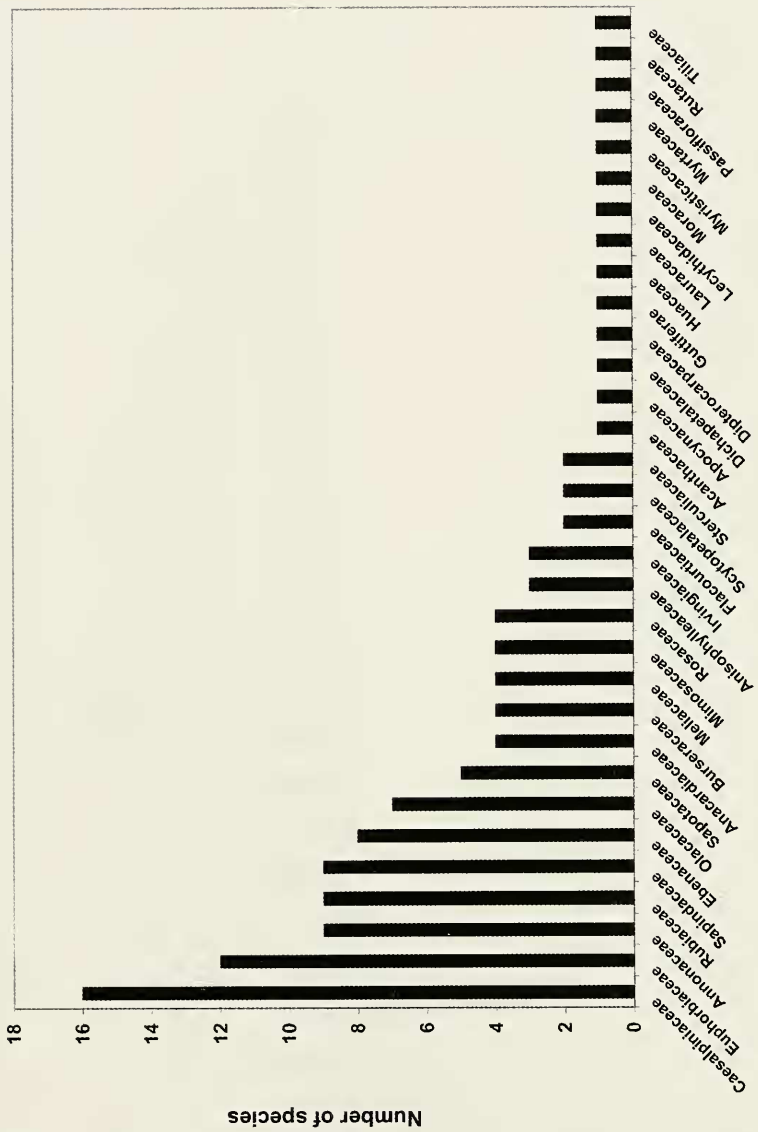

FIGURE 9. Number of tree species per family at medium altitude (200–450 m; cumulative data from plots 5, 8, 11, 13, 17 and 18).

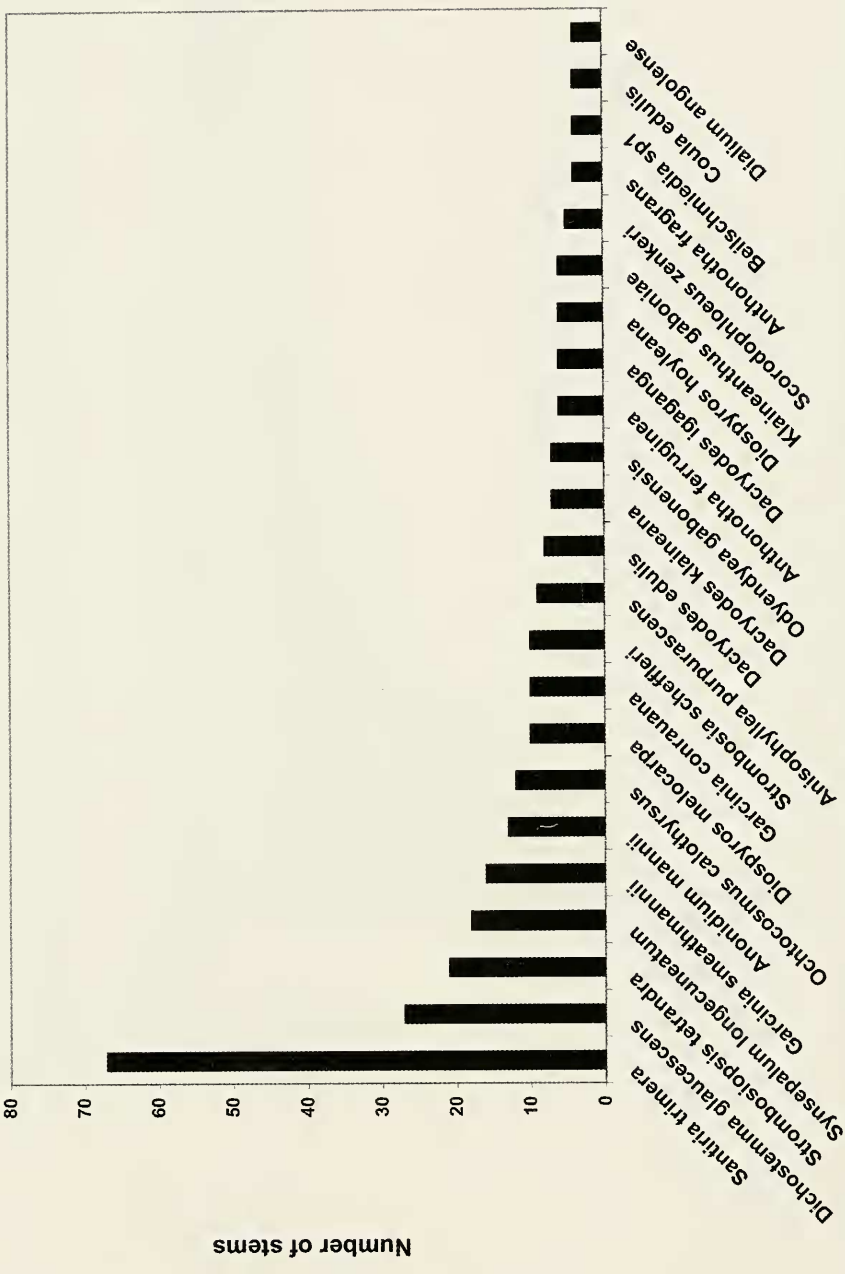

FIGURE 10. Total number of stems for the most common tree species at high altitude (>450 m; cumulative data from plots 6, 7, 10, 15 and 16).

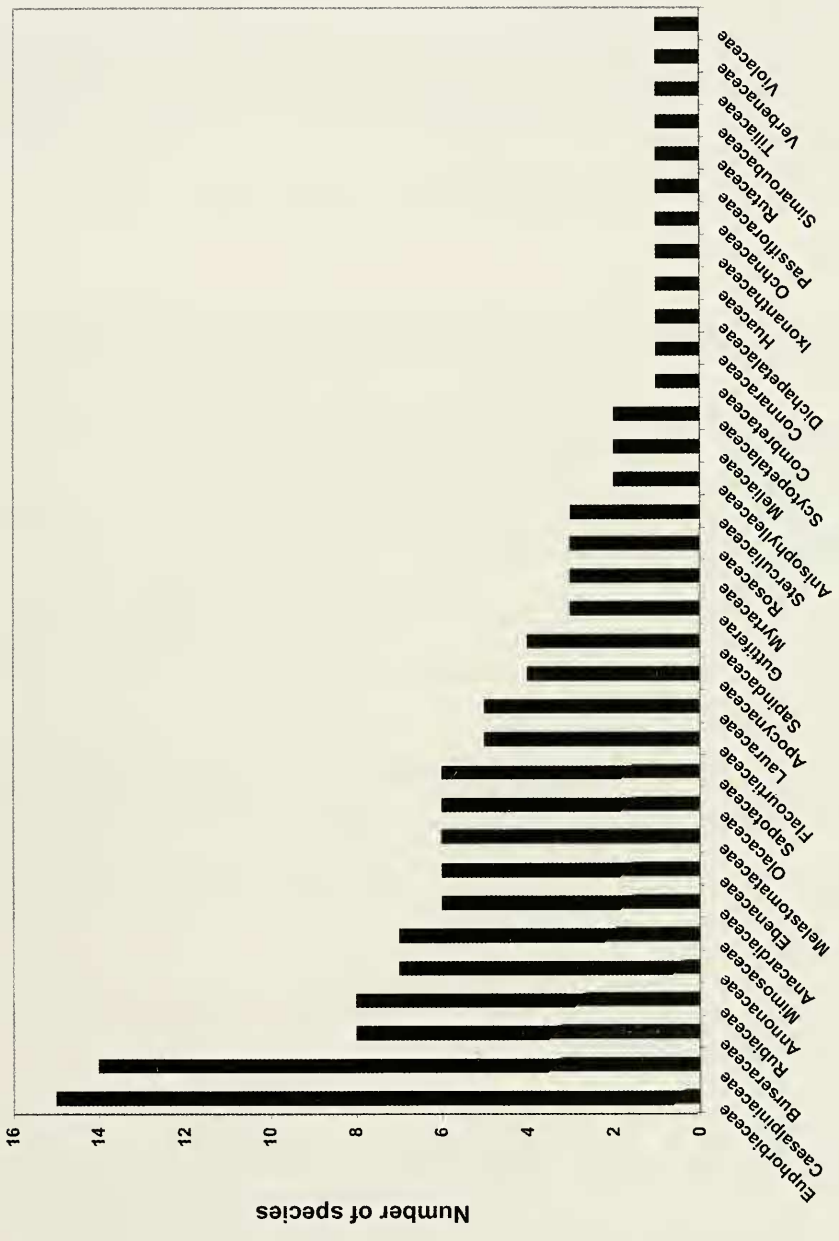

FIGURE 11. Number of tree species per family at high altitude (>450 m; cumulative data from plots 6, 7, 10, 15 and 16).

At medium altitude, we note an increase in the number of Annonaceae species. In the canopy layer *Librevillea klainei*, *Plagiosiphon emarginatus*, and *Dialium angolense* are frequently observed. *Dichostemma glaucescens*, *Santiria trimera*, and *Strombosia pustulata* are often present in the understory.

At high altitude, we note an increase in the number of Burseraceae, due to the presence of species such as *Aucoumea klaineana* and *Dacryodes igaganga*. The understory is dominated by *Santiria trimera*, *Dichostemma glaucescens*, and *Strombosiopsis tetrandra*. Species such as *Synsepalum longecuneatum* and *Ochthocosmus calothyrsus* are frequent and confined to this altitude.

Description of the Various Vegetation Types

Low Altitude Forest (<200 m)

Forest on dry soil. This forest is usually established on level ground. The understory is open. The canopy is fairly high, approximately 35–45 m. The following species are characteristic:

Large trees: *Desbordesia glaucescens*, *Pausinystalia macroceras*, *Scorodophloeus zenkeri*, *Pterocarpus soyauxii*, *Pentaclethra eetveldeana*, *Gambeya africana*, *Celtis tessmannii*, *Dialium angolense*, and *Cylicodiscus gabonensis*.

Medium-sized trees: *Coula edulis*, *Greenwayodendron suavolens*, *Picralima nitida*, *Staudtia kamerunensis*, *Diospyros hoyleana*, and especially the abundance of *Meiocarpidium lepidotum*.

Smaller trees: *Dichostemma glaucescens*, *Plagiostyles africana*, *Xylopia hypolampra*, *Diospyros dendo*, *Diospyros obliquifolia*, *Diospyros zenkeri*, and *Grewia coriacea*.

In the understory *Salacia* spp., *Leptonychia echinocarpa*, and *Rinorea* spp. are often encountered, and may be abundant in places.

Swamp forest. This forest occurs on badly drained soils. The understory is open, often with an abundance of lianas like *Landolphia mannii*. The canopy is high, about 40–45 m. This forest, which is often encountered along water courses, is characterized by the following species:

Tree layer: *Khaya ivorensis*, *Carapa procera*, *Gilbertiodendron dewevrei*, *Calpolcalyx dinklagei*, *Calpocalyx heitzii*, and *Hallea ciliata*.

Shrub layer: *Massularia acuminata*, *Sterculia tragacantha*, *Greenwayodendron suavolens*, *Trichilia pierreana*, *Homalium le-testui*, *Oncoba glauca*, *Hallea ciliata*, *Cynometra lujae*, *Cynometra nyangensis*, *Uvariastrum pierreanum*, *Anthonota macrophylla*, and *Ouratea elongatum*.

Gallery forest. In the southeastern region of the Monts Doudou Reserve, savannahs dominate the landscape, but the valleys in this region are generally occupied by a type of forest called gallery forest. This forest forms a refuge for big mammals (elephant, buffalo), large monkeys and other animals. Gallery forest is generally found along watercourses or small marshes. The forest is diverse and contains, amongst others: *Tetrapleura tetraptera*, *Ceiba pentandra*, *Dracaena* sp., *Anthocleista vogelii*, *Berlinia bracteosa*, *Daniellia klainei*, *Elaeophorbia drupifera*, *Landolphia mannii*, *Symphonia globulifera*, *Xylopia quintasii*, *Strychnos aculeata*, and *Lannea welwitschii*.

Medium Altitude Forest (200–450 m)

This forest type, which rises from the hill slopes, has an understory characterized by, amongst others: *Dichostemma glaucescens*, *Lasianthera africana*, *Rinorea* spp., *Santiria trimera*, and *Strombosia pustulata.*

The tree layer is generally dominated by species such as *Parkia bicolor*, *Dacryodes igaganga*, *Entandrophragma angolense*, and *Librevillea klaineana.*

The shrub layer is rich in species; the most frequently encountered ones are *Trichoscyha abut*, *T. acuminata*, and *Cleistopholis glauca*. The forest comprises several characteristic lianas such as *Strychnos aculeata*, *Landolphia mannii*, and *Salacia* spp. The presence of the tree fern *Cyathea camerooniana* along several of the streams is also of note.

High Altitude Forest (> 450 m)

These forests, occurring on the ridges and hill tops, are characterized by the frequent occurrence of *Santiria trimera.* Various *Begonia* species are common, especially on rock faces that occupy the high ridges.

The understory is generally open and consists mainly of shrubs such as *Phyllanthus diandrus*, *Scaphopetalum blackii, Santiria trimera*, *Anthonota fragrans*, *Isolona campanulata*, *Trichoscypha acuminata*, *Anonidium mannii*, *Dicranolepis disticha*, and *Maesobotrya pauciflora.*

The most important large tree species are *Aucoumea klaineana*, *Erythrophleum ivorense*, *Desbordesia glaucescens*, *Klainedoxa gabonensis*, *Syzygium staudtii*, and *Copaifera religiosia.*

Savannah

The savannah vegetation type is mainly located southwest of Mourindi, on dry soil. It is dominated by grasses such as *Andropogon chinensis*, *Andropogon gayanus*, *Anadelphia afzeliana*, and *Hyparrhenia familiaris*. Some other frequently encountered grasses are *Panicum brazzavillense*, *Rottboellia cochinchinensis*, and *Elymandra gossweileri*. A few shrub species are to be found, such as *Annona senegalensis*, *Dichrostachys cinerea*, and *Sarcocephalus latifolius*. Regarding the other herbaceous species, the presence of *Asparagus* sp. is remarkable.

Conclusions

1. The Monts Doudou Reserve can now be considered as a botanically fairly well known area. The number of species recorded up to now is 991. The number of botanical collections has increased towards 2459, and around 400 other collections are awaiting their treatment and identification.

2. Around 11% of the plant species of the Monts Doudou Reserve have a very limited area of distribution, and are endemic to the region. This figure is likely to increase following renewed collecting activities.

3. The hypothesis that the Monts Doudou represent a former Pleistocene rain forest refuge area is confirmed and reinforced by observations of additional indicator species.

4. The areas having a very high botanical biodiversity, including high numbers of rare and endemic species, are situated at the medium (300 m) and high altitude (above 400 m) zones of the Monts Doudou Reserve.

5. The botanical biodiversity value of a given region should be studied in relation to the total number of species and the collecting index (number of specimens per square kilometer).

6. The diversity of the vegetation (number of species per surface unit) shows a clear relationship with, and increases considerably with, increasing altitude. This is true for both the woody and herbaceous flora.

Recommendations

A thorough botanical inventory of the Mont Moungoubi, and other high altitude zones, is strongly recommended. We foresee the discovery of many other, very rare species or even some new to science.

Further development of a standardized method to determine the botanical biodiversity value of a given region in Gabon is strongly recommended.

The availability of a detailed vegetation map will render an inventory of plots much more worthwhile, as more firm conclusions and recommendations related to conservation and management can be made. The development of such a map for the Monts Doudou Reserve is therefore highly recommended.

To facilitate future scientific research in the Monts Doudou one has to emphasize the improvement of the existing forest roads.

In order to understand the vegetation dynamics between the forest and the savannah, it is important to leave certain savannahs untouched by man for a certain period of time.

In order to get a better understanding of the forest dynamics of the Monts Doudou, it would be worthwhile to re-inventory the 1 ha plot established by J. M. Reitsma in 1985–1987 (Reitsma 1988).

Acknowledgments

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Appendix A

Species List of the Monts Doudou Reserve
(based on botanical collections and plot inventories)

Dicotyledonae

ACANTHACEAE (27)
Adhatoda buchholzii (Lindau) S.Moore
Adhatoda le-testui (R.Benoist) Heine
Anisosepalum alboviolaceum (R.Benoist) E.Hossain ssp. *alboviolaceum*
Anisotes macrophyllus (Lindau) Heine
Asystasia gangetica (L.) T.Anderson
Brillantaisia soyauxii Lindau
Brillantaisia vogeliana (Nees) Benth.
Dicliptera verticillata (Forsk.) C.Christ.
Elytraria marginata Vahl
Hypoestes forskaolii (Vahl) R.Br.
Justicia bolomboensis De Wild.
Justicia claessensii De Wild.
Justicia laxa T.Anderson
Justicia tenella (Nees) T.Anderson
Nelsonia canescens (Lam.) Spreng.
Phaulopsis angolana S.Moore
Physacanthus batanganus (G.Braun & K.Schum.) Lindau
Physacanthus nematosiphon (Lindau) Rendle & Britten
Pseuderanthemum tunicatum (Afzel.) Milne-Redh.
Rhinacanthus virens (Nees) Milne-Redh.
Saintpauliopsis lebrunii Staner
Staurogyne letestuana R.Benoist
Stenandrium gabonicum (R.Benoist) Vollesen
Stenandrium guineense (Nees) K.Vollesen
Stenandrium talbotii (S.Moore) Vollesen
Thomandersia butayei De Wild.
Thomandersia hensii De Wild. & Th.Dur.

AMARANTHACEAE (3)
Achyranthes aspera Wall.
Celosia sp.
Cyathula prostrata (L.) Blume

ANACARDIACEAE (6)
Lannea welwitschii (Hiern) Engl.
Pseudospondias longifolia Engl.
Sorindeia nitidula Engl.
Spondias mombin L.
Trichoscypha acuminata Engl.
Trichoscypha gambana Jongkind

ANCISTROCLADACEAE (1)
Ancistrocladus sp.

ANISOPHYLLEACEAE (3)
Anisophyllea myriosticta J.J.Floret
Anisophyllea polyneura J.J.Floret
Anisophyllea purpurascens Hutch. & Dalz.

ANNONACEAE (32)
Annickia chlorantha (Oliv.) Setten & Maas
Annickia pilosa (Exell) Setten & Maas
Annona senegalensis Pers.
Anonidium mannii (Oliv.) Engl. & Diels
Cleistopholis glauca Pierre ex Engl. & Diels
Cleistopholis staudtii Engl. & Diels
Greenwayodendron suaveolens (Engl. & Diels) Verdc. ssp. *suaveolens*
Isolona campanulata Engl. & Diels
*Isolona hexaloba (*Pierre) Engl. & Diels
Isolona zenkeri Engl.
Letestudoxa bella Pellegr.
Meiocarpidium lepidotum (Oliv.) Engl. & Diels
Monanthotaxis sp.
Polyalthia suaveolens Engl. & Diels
Polyceratocarpus parviflorus (Baker f.) Ghesq.
Popowia sp.
Pseudartabotrys le-testui Pellegr.
Uvaria comperei Le Thomas
Uvaria hispidocostata Pierre ex Engl. & Diels
Uvaria klaineana Engl. & Diels
Uvaria lastoursvillensis Pellegr.
Uvaria psorosperma Engl. & Diels
Uvariastrum pierreanum Engl. & Diels
Uvariastrum pynaertii De Wild.
Uvariopsis congolana (De Wild.) Fries
Xylopia acutiflora (Dunal) A.Rich.
Xylopia aethiopica (Dunal) A.Rich.
Xylopia hypolampra Mildbr.
Xylopia phloiodora Mildbr.
Xylopia pynaertii De Wild.
Xylopia quintasii Engl. & Diels

Xylopia staudtii Engl. & Diels

APOCYNACEAE (29)
Callichilia bequaertii De Wild.
Calocrater preussii K.Schum.
Cyclocotyla congolensis Stapf
Cylindropsis parvifolia Pierre
Dictyophleba ochracea (K.Schum. ex Hallier f.) Pichon
Holarrhena floribunda (G.Don) Dur. & Schinz
Hunteria umbellata (K.Schum.) Hallier f.
Landolphia congolensis (Stapf) Pichon
Landolphia dewevrei Stapf
Landolphia foretiana (Pierre ex Jum.) Pichon
Landolphia glabra (Pierre ex Stapf) Pichon
Landolphia incerta (K.Schum.) Persoon
Landolphia mannii Dyer
Landolphia owariensis P.Beauv.
Landolphia pyramidata (Pierre) Persoon
Landolphia reticulata Hallier f.
Landolphia robustior (K.Schum.) Persoon
Orthopichonia cirrhosa (Radlk.) H.Huber
Picralima nitida (Stapf) Th. & H.Dur.
Pleiocarpa rostrata Benth.
Rauvolfia letouzeyi Leeuwenb.
Rauvolfia mannii Stapf
Rauvolfia vomitoria Afzel.
Tabernaemontana bouquetii (Boiteau) Leeuwenb.
Tabernaemontana crassa Benth.
Tabernaemontana letestui (Pellegr.) Pichon
Tabernanthe iboga Baill.
Voacanga bracteata Stapf
Voacanga psilocalyx Pierre ex Stapf

ARALIACEAE (1)
Schefflera barteri (Seem.) Harms

ARISTOLOCHIACEAE (2)
Pararistolochia ceropegioides (S.Moore) Hutch. & Dalziel
Pararistolochia triactina (Hook.f.) Hutch. & Dalziel

BALANOPHORACEAE (1)
Thonningia sanguinea Vahl

BALSAMINACEAE (6)
Impatiens floretii N.Hallé & A.M.Louis
Impatiens gossweileri G.M.Schulze ssp. *gossweileri*
Impatiens hians Hook.f.
Impatiens mackeyana Hook.f.

Impatiens niamniamensis Gilg
Impatiens palpebrata Hook.f.

BEGONIACEAE (24)
Begonia auriculata Hook.f.
Begonia capillipes Gilg
Begonia clypeifolia Hook.f.
Begonia dewildei Sosef
Begonia eboloensis Engl.
Begonia elaeagnifolia Hook.f.
Begonia elatostemmoides Hook.f.
Begonia fusialata Warb. var. *fusialata*
Begonia gabonensis J.J.de Wilde
Begonia hirsutula Hook.f.
Begonia komoensis Irmsch.
Begonia lacunosa Warb.
Begonia letouzeyi Sosef
Begonia longipetiolata Gilg
Begonia loranthoides Hook.f. ssp. *rhopalocarpa* (Warb.) J.J.de Wilde
Begonia macrocarpa Warb.
Begonia mannii Hook.f.
Begonia mildbraedii Gilg
Begonia poculifera Hook.f.
Begonia polygonoides Hook.f.
Begonia sciaphila Gilg ex Engl.
Begonia scutifolia Hook.f.
Begonia scutulum Hook.f.
Begonia vankerckhovenii De Wild.

BIGNONIACEAE (3)
Kigelia africana (Lam.) Benth.
Markhamia tomentosa (Benth.) K.Schum. ex Engl.
Newbouldia laevis (P.Beauv.) Seeman ex Bureau

BIXACEAE (1)
Bixa orellana L.

BOMBACACEAE (1)
Ceiba pentandra (L.) Gaertn.

BORAGINACEAE (1)
Heliotropium ovalifolium Forssk.

BURSERACEAE (10)
Aucoumea klaineana Pierre
Canarium schweinfurthii Engl.
Dacryodes buettneri (Engl.) H.J.Lam
Dacryodes edulis (G.Don) H.J.Lam

Dacryodes igaganga Aubrév. & Pellegr.
Dacryodes klaineana (Pierre) H.J.Lam
Dacryodes letestui (Pellegr.) H.J.Lam
Dacryodes macrophylla (Oliv.) H.J.Lam
Dacryodes normandii Aubrév. & Pellegr.
Santiria trimera (Oliv.) Aubrév. & Pellegr.

CACTACEAE (1)
Rhipsalis baccifera (J.S.Mill.) Stearn

CAESALPINIACEAE (56)
Anthonotha acuminata (De Wild.) J.Léonard
Anthonotha ferruginea (Harms) J.Léonard
Anthonotha fragrans (Baker f.) Exell & Hillcoat
Anthonotha macrophylla P.Beauv.
Anthonotha pynaertii (De Wild.) Exell & Hillcoat
Anthonotha trunciflora (Harms) J.Léonard
Aphanocalyx heitzii (Pellegr.) Wieringa
Aphanocalyx microphyllus (Harms) Wieringa ssp. *microphyllus*
Baikiaea insignis Benth.
Berlinia auriculata Benth.
Berlinia bracteosa Benth.
Berlinia confusa Hoyle
Bikinia coriacea (J.Morel ex Aubrév.) Wieringa
Bikinia letestui (Pellegr.) Wieringa
Bobgunnia fistuloides (Harms) Kirkbr. & Wiersema
Brachystegia mildbraedii Harms
Cassia chamaecrista L.
Cassia hirsuta L.
Cassia mannii Oliv.
Chamaecrista absus (L.) Irwin & Barneby
Copaifera religiosa J.Léonard
Crudia harmsiana De Wild. var. *velutina* J.Léonard
Cynometra lujae De Wild.
Cynometra mannii Oliv.
Cynometra nyangensis Pellegr.
Daniellia klainei Pierre ex A.Chev.
Daniellia soyauxii (Harms) Rolfe
Dialium angolense Welw. ex Oliv.
Dialium dinklagei Harms
Dialium guineense Willd.
Didelotia africana Baill.
Didelotia brevipaniculata J.Léonard
Distemonanthus benthamianus Baill.
Gilbertiodendron brachystegioides (Harms) J.Léonard
Gilbertiodendron ogoouense (Pellegr.) J.Léonard
Gilbertiodendron stipulaceum (Benth.) J.Léonard
Gilbertiodendron unijugum (Harms) J.Léonard

Griffonia physocarpa Baill.
Guibourtia ehie (A.Chev.) J.Léonard
Guibourtia tessmannii (Harms) J.Léonard
Hylodendron gabunense Taub.
Hymenostegia floribunda (Benth.) Harms
Hymenostegia klainei Pierre ex Pellegr.
Hymenostegia ngounyensis Pellegr.
Isomacrolobium conchyliophorum (Pellegr.) Aubrév. & Pellegr.
Julbernardia brieyi (De Wild.) Troupin
Librevillea klainei (Pierre ex Harms) Hoyle
Neochevalierodendron stephanii (A.Chev.) J.Léonard
Oddoniodendron micranthum (Harms) Baker
Plagiosiphon emarginatus (Hutch. & Dalz.) J.Léonard
Scorodophloeus zenkeri Harms
Senna alata (L.) Roxburgh.
Senna timoriensis (DC.) Irwin & Barneby
Tetraberlinia bifoliolata (Harms) Hauman
Tetraberlinia polyphylla (Harms) J.Léonard

CAMPANULACEAE (2)
Lobelia minutula Engl.
Wahlenbergia sp.

CELASTRACEAE (incl. HIPPOCRATEACEAE) (20)
Apodostigma pallens (Planch. ex Oliv.) Wilcz. var. *buchholzii* (Loes.) N.Hallé
Elachyptera holtzii (Loes. ex Harms) Wilcz. ex N.Hallé
Hippocratea myriantha Oliv.
Loeseneriella apocynoides (Welw. ex Oliv.) N.Hallé ex J.Raynal
Prionostemma fimbriata (Exell) N.Hallé
Salacia debilis (G.Don) Walp.
Salacia dimidia N.Hallé
Salacia elegans Welw. ex Oliv.
Salacia erecta (G.Don) Walp.
Salacia hispida Blakelock
Salacia lehmbachii Loes.
Salacia letestui Pellegr.
Salacia loloensis Loes.
Salacia mayumbensis Exell & Mendonça
Salacia nitida (Benth.) N.E.Br.
Salacia pyriformis (Sabine) Steud.
Salacia regeliana J.Braun & K.Schum.
Salacia staudtiana var. *tsopoensis* (De Wild.) N.Hallé
Salacia talbotii Baker f.
Salacia whytei Loes.

CERATOPHYLLACEAE (1)
Ceratophyllum sp.

COMBRETACEAE (7)
Combretum aphanopetalum Engl. & Diels
Combretum bracteatum (Laws.) Engl. & Diels
Combretum falcatum (Welw. ex Hiern) Jongk.
Combretum mannii Engl. & Diels
Combretum paniculatum Vent.
Combretum rabiense Jongkind
Combretum racemosum P.Beauv.
Strephonema sericeum Hook.f.

COMPOSITAE (7)
Ageratum conyzoides L.
Aspilia africana (Pers.) C.D.Adams
Hypericophyllum congoense (O.Hoffm.) N.E.Br.
Mikania cordata (Burm.f.) Robinson
Struchium sparganophora (L.) Kuntze
Tithonia diversifolia (Hemsley) A.Gray
Vernonia stellulifera (Benth.) Jeffrey

CONNARACEAE (17)
Agelaea paradoxa Gilg
Agelaea pentagyna (Lam.) Baill.
Agelaea poggeana Gilg
Cnestis corniculata Lam.
Cnestis ferruginea Vahl ex DC.
Connarus longistipitatus Gilg
Hemandradenia mannii Stapf
Jollydora duparquetiana (Baill.) Pierre
Manotes expansa Sol. ex Planch.
Manotes griffoniana Baill.
Manotes macrantha (Gilg) Schellenb.
Rourea minor (Gaertn.) Alston
Rourea myriantha Baill.
Rourea obliquifoliolata Gilg
Rourea parviflora Gilg
Rourea solanderi Baker
Rourea thomsonii (Baker) Jongkind

CONVOLVULACEAE (1)
Ipomoea sp.

CRUCIFERAE (1)
Rorippa madagascariensis (DC.) Hara

CUCURBITACEAE (1)
Momordica sp.

DICHAPETALACEAE (18)
Dichapetalum choristilum Engl. var. *choristilum*
Dichapetalum congoense Engl. & Ruhl.
Dichapetalum dewevrei De Wild. & Th.Dur. var. *dewevrei*
Dichapetalum fructuosum Hiern
Dichapetalum gabonense Engl.
Dichapetalum glomeratum Engl.
Dichapetalum heudelotii (Planch. ex Oliv.) Baill. var. *heudelotii*
Dichapetalum heudelotii (Planch. ex Oliv.) Baill. var. *hispidum* (Oliv.) Breteler
Dichapetalum insigne Engl.
Dichapetalum integripetalum Engl.
Dichapetalum lujae De Wild. & Th.Dur.
Dichapetalum madagascariense Poir. var. *madagascariense*
Dichapetalum melanocladum Breteler
Dichapetalum minutiflorum Engl. & Ruhl.
Dichapetalum parvifolium Engl.
Dichapetalum zenkeri Engl.
Dichapetalum spec. nov.
Tapura letestui Pellegr.

DILLENIACEAE (1)
Tetracera alnifolia Willd. ssp. *alnifolia*

DIPTEROCARPACEAE (1)
Marquesia excelsa (Pierre) R.E.Fr.

EBENACEAE (17)
Diospyros bipindensis Gürke
Diospyros canaliculata De Wild.
Diospyros cinnabarina (Gürke) F.White
Diospyros conocarpa Gürke & K.Schum.
Diospyros dendo Welw. ex Hiern
Diospyros fragrans Gürke
Diospyros gabunensis Gürke
Diospyros hoyleana F.White
Diospyros iturensis (Gürke) Letouzey & F.White
Diospyros mannii Hiern
Diospyros melocarpa F.White
Diospyros obliquifolia (Hiern ex Gürke) F.White
Diospyros physocalycina Gürke
Diospyros piscatoria Gürke
Diospyros suaveolens Gürke
Diospyros zenkeri (Gürke) F.White

EUPHORBIACEAE (47)
Alchornea cordifolia (Schum. & Thonn.) Müll.Arg.
Alchornea floribunda Müll.Arg.
Bridelia atroviridis Müll.Arg.

Bridelia ferruginea Benth.
Bridelia micrantha (Hochst.) Baill.
Centroplacus glaucinus Pierre
Cleistanthus polystachyus Hook.f. ex Planch.
Croton mubango Müll.Arg.
Croton sylvaticus Hochst. ex Krauss
Crotonogyne manniana Müll.Arg.
Cyathogyne viridis Müll.Arg.
Cyrtogonone argentea (Pax) Prain
Dichostemma glaucescens Pierre
Discoglypremna caloneura (Pax) Prain
Drypetes capillipes (Pax) Pax & K.Hoffm.
Drypetes gilgiana (Pax) Pax & K.Hoffm.
Drypetes ituriensis Pax & K.Hoffm.
Drypetes molunduana Pax & K.Hoffm.
Drypetes pierreana Hutch.
Elaeophorbia drupifera (Thonn.) Stapf
Klaineanthus gaboniae Pierre ex Prain
Macaranga barteri Müll.Arg.
Macaranga gabunica Prain
Macaranga poggei Pax
Maesobotrya barteri (Baill.) Hutch. var. *barteri*
Maesobotrya pauciflora Pax
Mallotus oppositifolius (Geisel.) Müll.Arg.
Maprounea membranacea Pax & K.Hoffm.
Mareya micrantha (Benth.) Müll.Arg.
Mareyopsis longifolia (Pax) Pax & K.Hoffm.
Margaritaria discoideus (Baill.) Webster
Microdesmis sp.
Mildbraedia paniculata Pax
Phyllanthus diandrus Pax
Phyllanthus discoideus Pax
Phyllanthus muelleranus (O.Kuntze) Exell
Plagiostyles africana (Müll.Arg.) Prain
Pogonophora letouzeyi Feuillet
Protomegabaria sp.
Pycnocoma angustifolia Prain
Sapium guineense (Benth.) Kuntze
Sibangea arborescens Oliv.
Thecacoris leptobotrya (Müll.Arg.) Brenan
Tragia sp.
Uapaca acuminata (Hutch.) Pax & K.Hoffm.
Uapaca guineensis Müll.Arg.
Uapaca heudelotii Baill.

FLACOURTIACEAE (9)
Casearia barteri Mast.
Dovyalis zenkeri Gilg

Homalium letestui Pellegr.
Oncoba brachyanthera Oliv.
Oncoba dentata Oliv.
Oncoba flagelliflora (Mildbr.) Hul
Oncoba glauca (P.Beauv.) Planch.
Scottellia klaineana Pierre
Trichostephanus gabonensis Breteler

GENTIANACEAE (1)
Voyria primuloides Baker

GESNERIACEAE (2)
Acanthonema sp.
Epithema tenue C.B.Clarke

GUTTIFERAE (13)
Allanblackia floribunda Oliv.
Endodesmia calophylloides Benth.
Garcinia conrauana Engl.
Garcinia kola Heckel
Garcinia lucida Vesque
Garcinia ovalifolia Oliv.
Garcinia punctata Oliv.
Garcinia smeathmannii (Planch. & Triana) Oliv.
Garcinia volkensii Baker
Harungana madagascariensis Lam. ex Poir.
Pentadesma butyracea Sabine
Psorospermum tenuifolium Hook.f.
Vismia rubescens Oliv.

HUACEAE (3)
Afrostyrax kamerunensis Perkins & Gilg
Afrostyrax lepidophyllus Mildbr.
Hua gabonii Pierre ex De Wild.

ICACINACEAE (9)
Desmostachys brevipes (Engl.) Sleumer
Desmostachys oblongifolia (Engl.) Villiers
Desmostachys tenuifolius Oliv. var. *tenuifolius*
Icacina claessensii De Wild.
Icacina mannii Oliv. var. *lebrunii* Boutique
Icacina mannii Oliv. var. *mannii*
Lasianthera africana P.Beauv.
Leptaulus daphnoides Benth.
Pyrenacantha acuminata Engl.
Rhaphiostylis ferruginea Engl. var. *ferruginea*

IRVINGIACEAE (4)
Desbordesia glaucescens (Engl.) Tiegh.
Irvingia gabonensis (Aubry-Lecomte ex O'Rorke) Baill.
Klainedoxa gabonensis Pierre ex Engl. var. *gabonensis*
Klainedoxa trillesii Pierre ex v.Tiegh.

IXONANTHACEAE (1)
Ochtocosmus calothyrsus (Mildbr.) Hutch. & Dalz.

LABIATAE (7)
Achyrospermum ciliatum Gürke
Achyrospermum oblongifolium Baker
Hyptis lanceolata Poir.
Ocimum sp.
Platostoma africanum P.Beauv.
Solenostemon monostachyus (P.Beauv.) Briq.
Solenostemon repens (Gürke) J.K.Morton

LAURACEAE (2)
Beilschmiedia dinklagei (Engl.) Robyns & Wilczek
Beilschmiedia mannioides Robyns & Wilczek

LECYTHIDACEAE (2)
Napoleonaea sp.
Petersianthus macrocarpus (P.Beauv.) Liben

LEPIDOBOTRYACEAE (1)
Lepidobotrys staudtii Engl.

LINACEAE (5)
Hugonia micans Engl.
Hugonia planchonii Hook.f. var. *planchonii*
Hugonia platysepala Welw. ex Oliv.
Hugonia villosa Engl.
Pinacopodium congolense (S.Moore) Exell & Mendonça

LOGANIACEAE (12)
Anthocleista schweinfurthii Gilg
Anthocleista vogelii Planch.
Mostuea batesii Baker
Mostuea brunonis Didr. var. *brunonis*
Strychnos aculeata Solered.
Strychnos canthioides Leeuwenb.
Strychnos dale De Wild.
Strychnos ndengensis Pellegr.
Strychnos penninervis A.Chev.
Strychnos phaeotricha Gilg
Strychnos tricalysioides Hutch. & M.B.Moss

Strychnos urceolata Leeuwenb.

LORANTHACEAE (4)
Globimetula cornutibracteata Bulle ex Wiens & Polhill
Globimetula dinklagei (Engl.) Tiegh.
Loranthus sp.
Phragmanthera batangae (Engl.) S.Balle

MALPIGHIACEAE (3)
Acridocarpus longifolius (G.Don) Hook.f.
Acridocarpus macrocalyx Engl.
Acridocarpus smeathmannii (DC.) Guill. & Perr.

MALVACEAE (8)
Hibiscus diversifolius Jacq.
Hibiscus physaloides Guill. & Perr.
Hibiscus rostellatus Guill. & Perr.
Hibiscus surattensis L.
Sida linifolia Juss. ex Cav.
Sida rhombifolia L.
Sida stipulata Cav.
Urena lobata L.

MEDUSANDRACEAE (1)
Soyauxia floribunda Hutch.

MELASTOMATACEAE (28)
Amphiblemma ciliatum Cogn.
Amphiblemma molle Hook.f.
Amphiblemma setosum Hook.f.
Calvoa hirsuta Hook.f.
Calvoa orientalis Taub.
Calvoa pulcherrima Gilg ex Engl.
Calvoa seretii De Wild.
Cincinnobotrys acaulis (Cogn.) Gilg
Dicellandra barteri Hook.f. var. *barteri*
Dicellandra descoingsii Jacq.-Fél.
Dinophora spenneroides Benth.
Dissotis brazzae Cogn.
Dissotis congolensis (Cogn. ex Buettn.) Jacq.-Fél.
Dissotis multiflora (Sm.) Triana
Heterotis decumbens (P.Beauv.) Jacq.-Fél.
Medinilla mannii Hook.f.
Medinilla mirabilis (Gilg) Jacq.-Fél.
Memecylon calophyllum Gilg
Memecylon collinum Jacq.-Fél.
Memecylon klaineanum Jacq.-Fél.
Memecylon lateriflorum (G.Don) Bremek.

Memecylon salicifolium Jacq.-Fél.
Preussiella kamerunensis Gilg
Tristemma oreophilum Gilg
Tristemma vestitum Jacq.-Fél.
Warneckea cauliflora Jacq.-Fél.
Warneckea floribunda Jacq.-Fél.
Warneckea membranifolia (Hook.f.) Jacq.-Fél.
Warneckea sapinii (De Wild.) Jacq.-Fél.

MELIACEAE (9)
Carapa procera DC.
Entandrophragma angolense Welw. ex C.DC.
Entandrophragma congolense (De Wild.) A.Chev.
Guarea glomerulata Harms
Guarea thompsonii Sprague & Hutch.
Heckeldora staudtii (Harms) Staner
Khaya ivorensis A.Chev.
Trichilia monadelpha (Thonn.) J.J.de Wilde
Trichilia prieureana A.Juss.

MELIANTHACEAE (1)
Bersama maxima Baker

MENISPERMACEAE (3)
Cissampelos mucronata A.Rich.
Dioscoreophyllum cumminsii (Stapf) Diels
Jateorhiza macrantha (Hook.f.) Exell & Mendonça

MIMOSACEAE (19)
Acacia auriculiformis A.Cunn. ex Benth.
Aubrevillea platycarpa Pellegr.
Calpocalyx brevifolius Villiers
Calpocalyx dinklagei Harms
Calpocalyx heitzii Pellegr.
Cylicodiscus gabonensis Harms
Dichrostachys cinerea (L.) Wight & Arn. var. *platycarpa*
Entada gigas (L.) Fawcett & Rendle
Fillaeopsis discophora Harms
Mimosa pigra L.
Newtonia griffoniana (Baill.) Bak.f.
Newtonia leucocarpa (Harms) Gilbert & Boutique
Parkia bicolor A.Chev.
Parkia filicoidea Welw. ex Oliv.
Pentaclethra eetveldeana De Wild. & Th.Dur.
Pentaclethra macrophylla Benth.
Piptadeniastrum africanum (Hook.f.) Brenan
Pseudoprosopis gilletii (De Wild.) Villiers
Tetrapleura tetraptera (Schum. & Thonn.) Taub.

MORACEAE (7)
Dorstenia picta Bur.
Ficus conraui Warb.
Ficus subsagittifolia C.C.Berg
Ficus vogeliana (Miq.) Miq.
Myrianthus arboreus P.Beauv.
Myrianthus serratus (Trécul) Benth. & Hook. var. *letestui* De Ruiter
Trilepisium madagascariense Thouars ex DC.

MYRISTICACEAE (3)
Pycnanthus angolensis (Welw.) Warb.
Staudtia kamerunensis Warb. var. *gabonensis* (Warb.) Fouilloy
Staudtia kamerunensis Warb. var. *kamerunensis*

MYRSINACEAE (4)
Ardisia buesgenii (Gilg & Schellenb.) Taton
Ardisia lethomasiae Taton
Ardisia mayumbensis (R.Good) Taton
Ardisia staudtii Gilg

MYRTACEAE (4)
Eugenia klaineana (Pierre) Engl.
Eugenia obanensis Baker f.
Psidium guineense Sw.
Syzygium staudtii (Engl.) Mildbr.

NECTAROPETACEAE (1)
Pinacopodium congolense (S.Moore) Exell & Mendonça

NYMPHAEACEAE (1)
Nymphaea maculata Schum. & Thonn.

OCHNACEAE (13)
Campylospermum claessensii (De Wild.) Farron
Campylospermum excavatum (Tiegh.) Farron
Lophira alata Banks ex Gaertn.
Ouratea congesta (Oliv.) Engl. ex Gilg
Ouratea duparquetiana (Baill.) Gilg
Ouratea elongata (Oliv.) Engl.
Ouratea flava (Schum.) Hutch. & Dalziel
Ouratea gentilii De Wild.
Ouratea macrobotrys Gilg
Ouratea reticulata (P.Beauv.) Engl.
Ouratea turnerae (Hook.f.) Hutch. & Dalziel
Rhabdophyllum letestui Farron
Sauvagesia erecta L.

OLACACEAE (13)
Aptandra zenkeri Engl.
Coula edulis Baill.
Diogoa zenkeri (Engl.) Exell & Mendonça
Heisteria trillesiana Pierre
Heisteria zimmereri Engl.
Olax mannii Oliv.
Olax staudtii Engl.
Olax subscorpioidea Oliv. var. *subscorpioidea*
Strombosia grandifolia Hook.f. ex Benth.
Strombosia pustulata Oliv.
Strombosia scheffleri Engl.
Strombosiopsis tetrandra Engl.
Ximenia americana L.

OLEACEAE (1)
Chionanthus mannii (Sol.) Stearn ssp. *congestus* (Baker) Stearn

ONAGRACEAE (1)
Ludwigia sp.

OXALIDACEAE (1)
Biophytum talbotii (Baker f.) Hutch. & Dalziel

PAPILIONACEAE (34)
Abrus canescens Welw. ex Baker
Abrus fruticulosus Wall. ex W. & A.
Aganope gabonica (Baill.) Polhill
Angylocalyx talbotii Baker f. ex Hutch. & Dalz.
Angylocalyx zenkeri Harms
Baphia leptostemma Baill.
Baphia pilosa Baill.
Camoensia brevicalyx Benth.
Crotalaria goreensis Guill. & Perr.
Crotalaria ochroleuca G.Don
Dalbergia oblongifolia G.Don
Dalhousiea africana S.Moore
Desmodium adscendens (Sw.) DC. var. *adscendens*
Desmodium velutinum (Willd.) DC.
Dioclea reflexa Hook.f.
Eriosema glomeratum (Guill. & Perr.) Hook.f.
Eriosema parviflorum E.Mey. ssp. *parviflorum*
Eriosema psoraleoides (Lam.) G.Don
Indigofera capitata Kotschy
Indigofera hirsuta L. var. *hirsuta*
Leptoderris fasciculata (Benth.) Dunn
Millettia hypolampra Harms
Millettia marangensis Pellegr.

Millettia thonningii (Schum. & Thonn.) Bak.
Mucuna pruriens (L.) DC.
Platysepalum violaceum Welw. ex Baker
Pterocarpus soyauxii Taub.
Pueraria sp.
Stylosanthes sp.
Tephrosia nana Schweinf.
Uraria picta (Jacq.) DC.
Vigna gracilis (Guill. & Perr.) Hook.f.
Vigna reticulata Hook.f.
Zornia latifolia Sm.

PASSIFLORACEAE (6)
Barteria fistulosa Mast.
Barteria nigritana Hook.f.
Efulensia clematoides C.H.Wright
Paropsiopsis sp.
Passiflora edulis Sims
Passiflora foetida L.

PIPERACEAE (4)
Peperomia pellucida (L.) H.B.K.
Peperomia rotundifolia (L.) H.B.K.
Piper guineense Schum. & Thonn.
Piper umbellatum L.

POLYGALACEAE (2)
Carpolobia gossweileri (Exell) Petit
Polygala sp.

POLYGONACEAE (1)
Afrobrunnichia erecta (Asch.) Hutch. & Dalziel

RHAMNACEAE (1)
Maesopsis eminii Engl.

RHIZOPHORACEAE (1)
Cassipourea pumila Floret

ROSACEAE (6)
Dactyladenia barteri (Hook.f. ex Oliv.) Prance & F.White
Dactyladenia bellayana (Baill.) Prance & F.White
Dactyladenia pallescens (Baill.) Prance & F.White
Magnistipula cupheiflora Mildbr.
Maranthes chrysophylla (Oliv.) Prance
Maranthes glabra (Oliv.) Prance

RUBIACEAE (71)
Aidia micrantha (K.Schum.) F.White
Aoranthe cladantha (K.Schum.) Somers
Atractogyne gabonii Pierre
Aulacocalyx jasminiflora Hook.f. ssp. *jasminiflora*
Belonophora coriacea Hoyle
Bertiera aequatorialis N.Hallé
Bertiera aethiopica Hiern
Bertiera racemosa (G.Don) K.Schum.
Canthium crassum Schweinf.
Chassalia sp.
Chazaliella sp.
Coffea mayombensis A.Chev.
Commitheca letestuana N.Hallé
Corynanthe mayumbensis (R.D.Good) Raym.-Hamet
Corynanthe pachyceras K.Schum.
Craterispermum caudatum Hutch.
Craterispermum cerinanthum Hiern
Craterispermum laurinum Benth.
Craterispermum ledermannii K.Krause
Cuviera sp.
Dictyandra arborescens Hook.f.
Diodia sp.
Ecpoma hiernianum (Wernh.) N. & F.Hallé
Gardenia ternifolia Schum. & Thonn. ssp. *jovis-tonantis* (Welw.) Verdc.
Geophila afzelii Hiern
Geophila obvallata (Schum.) F.Didr.
Hallea ledermannii (K.Krause) Verdc.
Heinsia crinita (Afzel.) G.Taylor
Hymenodictyon biafranum Hiern
Ixora aneimenodesma K.Schum. ssp. *kizuensis* De Block
Ixora hippoperifera K.Schum.
Ixora nematopoda K.Schum.
Ixora praetermissa De Block
Keetia sp.
Lasianthus batangensis K.Schum.
Leptactina arnoldiana De Wild.
Leptactina laurentiana Dewevre
Massularia acuminata (G.Don) Bullock ex Hoyle
Morinda longiflora G.Don
Morinda morindoides (Baker) Milne-Redh.
Mussaenda polita Hiern
Mussaenda tenuiflora Benth.
Pauridiantha canthiiflora Hook.f.
Pauridiantha mayumbensis (R.Good) Bremek.
Pausinystalia johimbe (K.Schum.) Pierre ex Dup. & Beille
Pausinystalia macroceras (K.Schum.) Pierre
Pavetta corymbosa (DC.) F.N.Williams var. *neglecta* Bremek.

Pseudosabicea aurifodinae N.Hallé
Pseudosabicea mildbraedii (Wernh.) N.Hallé
Pseudosabicea mitisphaera N.Hallé
Psychotria fimbriatifolia R.Good
Psychotria venosa (Hiern) Petit
Psydrax arnoldiana (De Wild. & Th.Dur.) Bridson
Rothmannia liebrechtsiana (De Wild. & Th.Dur.) Keay
Rothmannia whitfieldii (Lindl.) Dandy
Rutidea sp.
Rytigynia rubra Robyns
Rytigynia verruculosa (Krause) Robyns
Sabicea calycina Benth.
Sabicea duparquetiana Baill. ex Wernh.
Sarcocephalus latifolius (Smith) Bruce
Schumanniophyton hirsutum (Hiern) R.Good
Schumanniophyton magnificum (K.Schum.) Harms
Sericanthe pellegrinii (N.Hallé) Robbrecht
Sericanthe petitii (N.Hallé) Robbrecht
Sherbournia curvipes (Wernh.) N.Hallé
Stipularia africana P.Beauv.
Tarenna jolinonii N.Hallé
Tarenna lasiorachis (K.Schum. & K.Krause) Bremek.
Tricalysia pallens Hiern
Tricalysia soyauxii K.Schum.
Trichostachys sp.
Uncaria africana G.Don var. *angolensis* Havil.
Vangueriella rufa (Robyns) Verdc.
Vangueriopsis rubiginosa Robyns
Virectaria procumbens (Sm.) Bremek.

RUTACEAE (5)
Araliopsis soyauxii Engl.
Clausena anisata (Willd.) Hook.f. ex Benth.
Zanthoxylum gilletii (De Wild.) Waterman
Zanthoxylum heitzii (Aubrév. & Pellegr.) Waterman
Zanthoxylum lemairei (De Wild.) Waterman

SAPINDACEAE (15)
Allophylus cobbe (L.) Räusch.
Chytranthus angustifolius Exell
Chytranthus macrobotrys (Gig) Exell & Mendonça
Chytranthus mortehanii (De Wild.) De Vold. ex Hauman
Chytranthus talbotii (Bak.f.) Keay
Deinbollia maxima Gilg
Eriocoelum kerstingii Gilg ex Engl.
Eriocoelum paniculatum Baker
Eriocoelum racemosum Baker
Ganophyllum giganteum (A.Chev.) Hauman

Laccodiscus sp.
Pancovia floribunda Pellegr.
Paullinia pinnata L.
Placodiscus boya Aubrév. & Pellegr.
Placodiscus opacus Radlk.

SAPOTACEAE (11)
Autranella congolensis (De Wild.) A.Chev.
Chrysophyllum pruniforme Pierre ex Engl.
Chrysophyllum subnudum Baker
Gambeya africana (A.DC.) Pierre
Letestua durissima (A.Chev.) Lecomte
Manilkara fouilloyana Aubrév. & Pellgr.
Omphalocarpum sp.
Synsepalum longecuneatum De Wild.
Tieghemella africana Pierre
Zeyherella letestui Aubrév. & Pellegr.
Zeyherella mayombense (Greves) Aubrév. & Pellegr.

SCROPHULARIACEAE (3)
Lindernia senegalensis (Benth.) Stau
Scoparia dulcis L.
Sopubia simplex (Hochst.) Hochst.

SCYTOPETALACEAE (5)
Brazzeia congoensis Baill.
Brazzeia soyauxii (Oliv.) Tiegh. var. *soyauxii*
Oubanguia africana Baill.
Rhaptopetalum coriaceum Oliv.
Scytopetalum klaineanum Pierre ex Engl.

SIMAROUBACEAE (3)
Nothospondias staudtii Engl.
Odyendyea gabonensis (Pierre) Engl.
Quassia africana (Baill.) Baill.

SOLANACEAE (3)
Capsicum annuum L.
Capsicum frutescens A.Br. & Bouch
Solanum torvum Sw.

STERCULIACEAE (15)
Cola acuminata (P.Beauv.) Schott & Endl.
Cola altissima Engl.
Cola crispiflora K.Schum.
Cola digitata Mast.
Cola duparquetiana Baill.
Cola flavovelutina K.Schum.

Cola lateritia K.Schum.
Cola rostrata K.Schum.
Leptonychia bampsii Germ. var. *ituriensis* Germ.
Leptonychia echinocarpa K.Schum.
Nesogordonia papaverifera (A.Chev.) Cap.
Scaphopetalum blackii Mast.
Scaphopetalum macranthum K.Schum.
Scaphopetalum thonneri De Wild. & Th.Dur.
Sterculia tragacantha Lindl.

THYMELAEACEAE (4)
Craterosiphon sp.
Dicranolepis disticha Planch.
Dicranolepis soyauxii Engl.
Octolepis decalepis Gilg

TILIACEAE (10)
Ancistrocarpus densispinosus Oliv.
Clappertonia ficifolia (Willd.) Decne
Desplatsia dewevrei (De Wild. & Th.Dur.) Burret
Desplatsia subericarpa Bocq.
Glyphaea brevis (Spreng.) Monachino
Grewia coriacea Mast.
Grewia flavescens Juss.
Grewia mollis Juss.
Triumfetta cordifolia A.Rich.
Triumfetta pentandra A.Rich.

ULMACEAE (3)
Celtis mildbraedii Engl.
Celtis philippensis Blanco
Celtis tessmannii Rendle

URTICACEAE (5)
Boehmeria macrophylla Hornem.
Boehmeria platyphylla D.Don ex Hamilton
Laportea ovalifolia (Schum. & Thonn.) Chew
Urera repens (Wedd.) Rendle
Urera trinervis (Hochst.) Friis & Immelman

VERBENACEAE (8)
Clerodendrum bipindense Gürke
Clerodendrum buettneri Gürke
Lantana camara L.
Lippia multiflora Moldenke
Premna angolensis Gürke
Stachytarpheta indica (L.) Vahl
Vitex doniana Sweet

Vitex grandifolia Gürke

VIOLACEAE (20)
Decorsella paradoxa A.Chev.
Rinorea albidiflora Engl.
Rinorea angustifolia (Thouars) Grey-Wilson
Rinorea batesii Chipp
Rinorea brachypetala (Turcz.) Kuntze
Rinorea braviracemosa Chipp
Rinorea cerasifolia M.Brandt
Rinorea cymulosa Kuntze
Rinorea dentata (P.Beauv.) Kuntze
Rinorea ebolowensis M.Brandt
Rinorea ilicifolia (Welw. ex Oliv.) Kuntze
Rinorea johnstonii Chipp
Rinorea mildbraedii M.Brandt
Rinorea oblongifolia (C.H. Wright) Marquand ex Chipp
Rinorea oppositifolia Exell
Rinorea parviflora Chipp
Rinorea subintegrifolia (P. Beauv.) Kuntze
Rinorea subsessilis Brandt
Rinorea talbotii (Baker f.) De Wild.
Rinorea welwitschii (Oliv.) Kuntze

VITACEAE (12)
Ampelocissus cavicaulis (Baker) Planch.
Cissus barbeyana De Wild. & Th.Dur.
Cissus diffusiflora (Baker) Planch.
Cissus dinklagei Gilg & Brandt
Cissus leonardii De Wit
Cissus petiolata Hook.f.
Cissus planchoniana Gilg
Cissus producta Afzel.
Cissus ruginosicarpa Desc.
Cissus smithiana (Baker) Planch.
Cyphostemma ukerewense (Gilg) Desc. var. *gabonicum* Desc.
Leea guineensis G.Don

VOCHYSIACEAE (1)
Erismadelphus exsul Mildbr.

MONOCOTYLEDONAE
AMARYLLIDACEAE (2)
Crinum jagus (Thomps.) Dandy
Scadoxus sp.

ARACEAE (7)
Anchomanes difformis (Blume) Engl.

Anubias barteri Schott var. *glabra* N.E.Br.
Anubias heterophylla Engl.
Culcasia panduriformis Engl. & K.Krause
Culcasia parviflora N.E.Br.
Nephthytis afzelii Schott
Nephthytis swainei Bogner

BURMANNIACEAE (1)
Gymnosiphon longistylus (Benth.) Hutch.

COMMELINACEAE (16)
Aneilema beniniense (P.Beauv.) Kunth
Aneilema dispermum Brenan
Aneilema umbrosum (Vahl) Kunth
Commelina cameroonensis J.K.Morton
Commelina diffusa Burm.f.
Commelina longicapsa C.B.Clarke
Cyanotis sp.
Floscopa africana (P.Beauv.) C.B.Clarke ssp. *petrophila* J.K.Morton
Palisota ambigua (P.Beauv.) C.B.Clarke
Palisota hirsuta (Thunb.) K.Schum.
Palisota lagopus Mildbr.
Palisota mannii C.B.Clarke
Pollia condensata C.B.Clarke
Pollia mannii C.B.Clarke
Polyspatha paniculata Benth.
Stanfieldiella imperforata (C.B.Clarke) Brenan

CYPERACEAE (19)
Bulbostylis laniceps C.B.Clarke ex Dur. & Schinz
Cyperus angolensis Boeck.
Cyperus articulatus L.
Cyperus difformis L.
Cyperus distans L.f.
Cyperus fertilis Boeck.
Cyperus mapanioides C.B.Clarke
Cyperus renschii Boeck.
Eleocharis acutangula (Roxb.) Schult.
Fuirena umbellata Rottb.
Hypolytrum lancifolium C.B.Clarke
Hypolytrum purpurascens Cherm.
Kyllinga odorata Vahl
Mapania amplivaginata K.Schum.
Mapania mannii C.B.Clarke
Scleria naumanniana Boeck.
Scleria pterota Presl
Scleria verrucosa Willd.
Scleria vogelii C.B.Clarke

DIOSCOREACEAE (4)
Dioscorea cayenensis Lam.
Dioscorea minutiflora Engl.
Dioscorea preussii Pax
Dioscorea semperflorens Uline

DRACAENACEAE (1)
Dracaena mannii Baker

GRAMINEAE (40)
Acroceras gabunense (Hack.) Clayton
Acroceras zizanioides (Kunth) Dandy
Anadelphia afzeliana (Rendle) Stapf
Andropogon chinensis (Nees) Merr.
Andropogon gayanus Kunth var. *polycladus* (Hack.) Clayton
Axonopus compressus (Sw.) P.Beauv.
Centotheca lappacea (L.) Desv.
Ctenium newtonii Hack.
Cyrtococcum chaetophorum (Roem. & Schult.) Dandy
Digitaria leptorhachis (Pilg.) Stapf
Elymandra gossweileri (Stapf) Clayton
Hyparrhenia familiaris (Steud.) Stapf
Hyparrhenia filipendula (Hochst.) Stapf
Imperata cylindrica (L.) Beauv.
Leptaspis zeylanica Nees ex Steud.
Megastachya mucronata (Poir.) P.Beauv.
Olyra latifolia L.
Oplismenus burmannii (Retz.) P.Beauv.
Oplismenus hirtellus (L.) P.Beauv.
Panicum brazzavillense Franch.
Panicum brevifolium L.
Panicum griffonii Franch.
Panicum laxum Sw.
Panicum maximum Jacq.
Panicum phragmitoides Stapf
Paspalum conjugatum Berg.
Paspalum paniculatum L.
Paspalum scrobiculatum L.
Paspalum virgatum L.
Pennisetum polystachion (L.) Schult. ssp. *polystachion*
Pennisetum unisetum (Nees) Benth.
Perotis indica (L.) Kuntze
Rottboellia cochinchinensis (Lour.) Clayton
Schizachyrium brevifolium (Sw.) Büse
Setaria homonyma (Steud.) Chiov.
Setaria megaphylla (Steud.) Dur. & Schinz
Sporobolus indicus (L.) R.Br. var. *pyramidalis* (P.Beauv.) Veldk.
Streptogyna crinita P.Beauv.

Urochloa brizantha (A.Rich.) R.D.Webster

LILIACEAE (3)
Asparagus sp.
Chlorophytum sparsiflorum Baker
Chlorophytum togoense Engl.

MARANTACEAE (8)
Ataenidia conferta (Benth.) Milne-Redh.
Hypselodelphys sp.
Marantochloa congensis (K.Schum.) J.Léonard & Mullenders var. *pubescens* J.Léonard & Mullenders
Marantochloa filipes (Benth.) Hutch.
Megaphrynium macrostachyum (Benth.) Milne-Redh.
Megaphrynium trichogynum Koechlin
Sarcophrynium sp.
Trachyphrynium braunianum (K.Schum.) Baker

ORCHIDACEAE (28)
Ancistrorhynchus capitatus (Lindl.) Summerh.
Ancistrorhynchus recurvus Finet
Angraecum podochiloides Schltr.
Bulbophyllum intertextum Lindl.
Bulbophyllum ivorense Cribb & Perez-Vera
Bulbophyllum oreonastes Rchb.f.
Bulbophyllum pumilum (Sw.) Lindl.
Bulbophyllum saltatorium Lindl. var. *distans* (Lindl.) J.J.Verm.
Calyptrochilum christyanum (Rchb.f.) Summerh.
Chamaeangis ichneumonea (Lindl.) Schltr.
Cynorkis debilis (Hook.f.) Summerh.
Cyrtorchis ringens (Rchb.f.) Summerh.
Diaphananthe bidens (Sw.) Schltr.
Diaphananthe rutila (Rchb.f.) Summerh.
Eulophia euglossa Rchb.f.
Habenaria stenochila Lindl.
Liparis tridens Kraenzl.
Listrostachys pertusa (Lindl.) Rchb.f.
Manniella gustavii Rchb.f.
Microcoelia microglossa Summerh.
Polystachya concreta (Jacq.) Garey & Sweet
Polystachya paniculata (Sw.) Rolfe
Polystachya polychaete Kraenzl.
Polystachya seticaulis Rendle
Summerhaysia laurentii (De Wild.) Cribb
Tridactyle anthomaniaca (Rchb.f.) Summerh.
Zeuxine elongata Rolfe
Zeuxine occidentalis (Summerh.) Geerinck

PALMAE (3)
Eremospatha macrocarpa G.Mann & H.Wendl.
Laccosperma opacum (G.Mann & H.Wendl.) Drude
Laccosperma secundiflora (P.Beauv.) Kuntze

TECOPHILAEACEAE (1)
Cyanastrum cordifolium Oliv.

ZINGIBERACEAE (8)
Aframomum limbatum (Oliv. & Hanb.) K.Schum.
Costus engleranus K.Schum.
Costus fissiligulatus Gagnep.
Costus gabonensis Koechlin
Costus lateriflorus Baker
Costus nudicaulis Baker
Renealmia cincinnata (K.Schum.) Baker
Renealmia macrocolea K.Schum.

PTERIDOPHYTAE

ADIANTACEAE (1)
Pityrogramma calomelanos (L.) Link

ASPLENIACEAE (10)
Asplenium africanum Desv.
Asplenium barteri Hook.
Asplenium gemmascens Alston
Asplenium hemitomum Hieron.
Asplenium jaundeense Hieron.
Asplenium rutifolium (Berg) Kunze
Asplenium subintegrum C.Chr.
Asplenium theciferum (Kunth) Mett.
Asplenium variabile Hook. var. *paucijugum* (Ballard) Alston
Asplenium variabile Hook. var. *variabile*

CYATHEACEAE (1)
Cyathea camerooniana Hook. var. *zenkeri* (Hieron. ex Diels) Tardieu-Blot

DENNSTAEDTIACEAE (3)
Blotiella currori (Hook.) Tyron
Microlepia speluncae (L.) Moore
Pteridium aquilinum (L.) Kuhn

DRYOPTERIDACEAE (11)
Diplazium welwitschii (Hook.) Diels
Lastreopsis subsimilis (Hook.) Tindale
Tectaria angelicifolia (Schum.) Copel.
Tectaria fernandensis (Baker) C.Chr.
Triplophyllum dimidiatum (Mett. ex Kuhn) Holttum

Triplophyllum gabonense Holttum
Triplophyllum pilosissimum (Moore) Holttum
Triplophyllum securidiforme (Hook.) Holttum var. *securidiforme*
Triplophyllum speciosum (Mett.) Holttum
Triplophyllum troupinii (Pic.Serm.) Holttum
Triplophyllum vogelii (Hook.) Holttum

GLEICHENIACEAE (1)
Dicranopteris linearis (Burm.) C.B.Clarke

HYMENOPHYLLACEAE (3)
Hymenophyllum kuhnii C.Chr.
Trichomanes crenatum Bosch
Trichomanes cupressoides Desv.

LOMARIOPSIDACEAE (3)
Elaphoglossum barteri (Baker) C.Chr.
Lomariopsis hederacea Alston
Lomariopsis rossii Holttum

LYCOPODIACEAE (3)
Huperzia staudtii (Nessel) Pic.Serm.
Lycopodiella cernua (L.) Pic.Serm.
Lycopodium sp.

MARATTIACEAE (1)
Marattia sp.

OLEANDRACEAE (4)
Arthropteris monocarpa (Cordem.) C.Chr.
Nephrolepis biserrata (Sw.) Schott
Nephrolepis undulata (Afzel. ex Sw.) J.Sm.
Oleandra distenta Kunze

PARKERIACEAE (1)
Ceratopteris cornuta (P.Beauv.) Lepr.

POLYPODIACEAE (6)
Drynaria laurentii (Christ.) Hieron.
Microgramma owariensis (Desv.) Alston
Microsorium punctatum (L.) Copel
Phymatosorus scolopendria (Burm.) Ching
Platycerium stemaria (P.Beauv.) Desv.
Polypodium owariense Desv.

PTERIDACEAE (1)
Pteris mildbraedii Hieron.

SCHIZAEACEAE (1)
Lygodium sp.

SELAGINELLACEAE (1)
Selaginella sp.

THELYPTERIDACEAE (1)
Thelypteris pauciflora (Hook.) Reed

VITTARIACEAE (2)
Antrophyum mannianum Hook.
Vittaria guineensis Desv.

APPENDIX B

BIODIVERSITY CATEGORIES AND VALUES FOR ALL SPECIES OF THE 11 SELECTED FAMILIES

ABBREVIATIONS:
Fl.Afr.Centr.: Flore de l'Afrique Centrale
Fl.Cam.: Flore du Cameroun
Fl.Gab.: Flore du Gabon
FTEA: Flora of Tropical East Africa
FWTA: Flora of West Tropical Africa

Acanthaceae (27 species)	Reference	Biodiversity category	Biodiversity value
Adhatoda buchholzii (Lindau) S.Moore	Fl.Gab.; FWTA	2B	9
Adhatoda le-testui (R.Benoist) Heine	Fl.Gab.	1A	81
Anisosepalum alboviolaceum (R.Benoist) E. Hossain	Champluvier, 1991	3B	3
Anisotes macrophyllus (Lindau) Heine	Fl.Gab.	3B	3
Asystasia gangetica (L.) T.Anderson	Fl.Gab.	5	1
Brillantaisia soyauxii Lindau	Fl.Gab.	2B	9
Brillantaisia vogeliana (Nees) Benth.	Fl.Gab.; FWTA	4B	1
Dicliptera verticillata (Forsk.) C.Christ.	Fl.Gab.	5	1
Elytraria marginata Vahl	FWTA	5	1
Hypoestes forskaolii (Vahl) R.Br.	Fl.Gab.	5	1
Justicia bolomboensis De Wild.	Fl.Gab.	3B	3
Justicia claessensii De Wild.	Fl.Gab.	3B	3
Justicia laxa T.Anderson	Fl.Gab.; FWTA	3B	3
Justicia tenella (Nees) T.Anderson	Fl.Gab.	5	1
Nelsonia canescens (Lam.) Spreng.	Morton, 1979	5	1
Phaulopsis angolana S.Moore	Fl.Gab.	4B	1
Physacanthus batanganus (G.Braun & K. Schum.) Lindau	Fl.Gab.; FWTA	3B	3
Physacanthus nematosiphon (Lindau) Rendle & Britten	Fl.Gab.; FWTA	3B	3
Pseuderanthemum tunicatum (Afzel.) Milne-Redh.	Fl.Gab.	5	1
Rhinacanthus virens (Nees) Milne-Redh.	Fl.Gab.	3B	3
Saintpauliopsis lebrunii Staner	Champluvier 1991	4A	3
Staurogyne letestuana R.Benoist	Champluvier, 1991	2B	9
Stenandrium gabonicum (R.Benoist) Vollesen	Vollesen, 1992	2A	27
Stenandrium guineense (Nees) Vollesen	Vollesen, 1992	5	1
Stenandrium talbotii (S.Moore) Vollesen	Vollesen, 1992	2B	9
Thomandersia butayei De Wild.	Fl.Gab.; Heine, 1966	3B	3
Thomandersia hensii De Wild. & Th.Dur.	Fl.Gab.; Heine, 1966	3B	3

Apocynaceae (29 species)	Reference	Biodiversity category	Biodiversity value
Callichilia bequaertii De Wild.	Beentje, 1978	3B	3
Calocrater preussii K.Schum.	Leeuwenb., 1995	2B	9
Cyclocotyla congolensis Stapf	Ploeg, 1985	3B	3
Cylindropsis parvifolia Pierre	Haegens, 1994	3B	3
Dictyophlebia ochracea (K.Schum. ex Hallier f.) Pichon	Hoogh, 1992	3B	3
Holarrhena floribunda (G.Don) Dur. & Schinz	Kruif, 1981	4B	1
Hunteria umbellata (K.Schum.) Hallier f.	Omino, 1996	3A	9
Landolphia congolensis (Stapf) Pichon	Persoon et al., 1992	3B	3
Landolphia dewevrei Stapf	Persoon et al., 1992	3B	3
Landolphia foretiana (Pierre ex Jum.) Pichon	Persoon et al., 1992	4B	1
Landolphia glabra (Pierre ex Stapf) Pichon	Persoon et al., 1992	3B	3
Landolphia incerta (K.Schum.) Persoon	Persoon et al., 1992	4B	1
Landolphia mannii Dyer	Persoon et al., 1992	3B	3
Landolphia owariensis P.Beauv.	Persoon et al., 1992	5	1
Landolphia pyramidata (Pierre) Persoon	Persoon et al., 1992	1A	81
Landolphia reticulata Hallier f.	Persoon et al., 1992	1B	27
Landolphia robustior (K.Schum.) Persoon	Persoon et al., 1992	3B	3
Orthopichonia cirrhosa (Radlk.) H.Huber	Vonk, 1989	2B	9
Picralima nitida (Stapf) Th. & H.Dur.	Omino, 1996	4B	1
Pleiocarpa rostrata Benth.	Omino, 1996	2B	9
Rauvolfia letouzeyi Leeuwenb.	Dilst & Leeuwenb., 1991	1B	27
Rauvolfia mannii Stapf	Dilst & Leeuwenb., 1991	5	1
Rauvolfia vomitoria Afzel.	Dilst & Leeuwenb., 1991	5	1
Tabernaemontana bouquetii (Boiteau) Leeuwenb.	Leeuwenb, 1991	1B	27
Tabernaemontana crassa Benth.	Leeuwenb., 1991	4B	1
Tabernaemontana letestui (Pellegr.) Pichon	Leeuwenb., 1991	2B	9
Tabernanthe iboga Baill.	Vonk & Leeuwenb., 1989	3B	3
Voacanga bracteata Stapf	Leeuwenb., 1985	4B	1
Voacanga psilocalyx Pierre ex Stapf	Leeuwenb., 1985	2B	9

Balsaminaceae (5 species)	Reference	Biodiversity category	Biodiversity value
Impatiens floretii N.Hallé & A.M.Louis	Hallé & Louis, 1989	1A	81
Impatiens gossweileri G.M.Schulze	Grey-Wilson, 1980	2A	27
Impatiens hians Hook.f.	Grey-Wilson, 1980	3B	3
Impatiens niamniamensis Gilg	Grey-Wilson, 1980	4B	1
Impatiens palpebrata Hook.f.	Grey-Wilson, 1980	2B	9

Begoniaceae (27 species)	Reference	Biodiversity category	Biodiversity value
Begonia auriculata Hook.f.	Wieringa, ms.	4B	1
Begonia capillipes Gilg	Wilde, 2002	2B	9
Begonia clypeifolia Hook.f.	Sosef, 1994	1B	27
Begonia dewildei Sosef	Sosef, 1994	1A	81
Begonia eboloensis Engl.	Wilde, 2002	2B	9
Begonia elaeagnifolia Hook.f.	Arends, 1992	2B	9
Begonia elatostemmoides Hook.f.	Wieringa, ms.	2B	9
Begonia fusialata Warb	Wilde, 2002	5	1
Begonia gabonensis J.J.de Wilde	Wilde, 2002	1A	81
Begonia hirsutula Hook.f.	Sosef, 1994	4B	1
Begonia komoensis Irmsch.	Wilde, 2002,	1B	27
Begonia laciniosa Warb.	Sosef, 1994	2B	9
Begonia letouzeyi Sosef	Sosef, 1994	2A	27
Begonia longipetiolata Gilg	Arends, 1992	3B	3
Begonia loranthoides Hook.f.	Wilde & Arends, 1979	3B	3
Begonia macrocarpa Warb.	Wieringa, ms.	4B	1
Begonia mannii Hook.	Wilde, 2002,	3B	3
Begonia mildbraedii Gilg	Sosef, 1994	4B	1
Begonia poculifera Hook.f.	Wilde & Arends, 1980	4B	1
Begonia polygonoides Hook.f.	Wilde, 2002	4B	1
Begonia sciaphila Gilg ex Engl.	Wieringa, ms.	2B	9
Begonia scutifolia Hook.f.	Sosef, 1994	2B	9
Begonia scutulum Hook.f.	Sosef, 1994	1B	27
Begonia vankerckhovenii De Wild.	Sosef, 1994	3A	9

Caesalpiniaceae (56 species)	Reference	Biodiversity category	Biodiversity value
Anthonotha acuminata (De Wild.) J.Léonard	Fl.Gab.; Fl.Afr.Centr.	3B	3
Anthonotha ferruginea (Harm) J.Léonard	Fl.Gab.; Fl.Cam.	2B	9
Anthonotha fragrans (Bak.f.) Exell & Hillcoat	Fl.Gab.	4B	1
Anthonotha macrophylla P.Beauv.	Fl.Gab.	4B	1
Anthonotha pynaertii (De Wild.) Exell & Hillcoat	Fl.Gab.; Fl.Afr.Centr.	3B	3
Anthonotha trunciflora (Harms) J.Léonard	Fl.Gab.	1A	81
Aphanocalyx heitzii (Pellegr.) Wieringa	Wieringa, 1999	1B	27
Aphanocalyx microphyllus (Harms) Wieringa	Wieringa, 1999	3B	3
Baikiaea insignis Benth.	Fl.Gab.	2B	9
Berlinia auriculata Benth.	Fl.Gab.	2B	9
Berlinia bracteosa Benth.	Fl.Gab.	2B	9
Berlinia confusa Hoyle	Fl.Gab.	3B	3
Bikinia coriacea (J.Morel ex Aubrév.) Wieringa	Wieringa, 1999	1B	27
Bikinia letestui (Pellegr.) Wieringa	Wieringa, 1999	2B	9
Bobgunnia fistuloides (Harms) Kirkbr. & Wiersema	Fl.Gab.	3B	3
Brachystegia mildbraedii Harms	Fl.Gab.	2B	9
Cassia chamaecrista L.	FTEA	(cult.)	–
Cassia hirsuta L.	Fl.Gab.	5	1
Cassia mannii Oliv.	Fl.Gab.; FTEA	5	1
Chamaecrista absus (L.) Irwin & Barneby	FTEA	5	1
Copaifera religiosa J.Léonard	Fl.Gab.	2B	9
Crudia harmsiana De Wild.	Fl.Afr.Centr.	2B	9
Cynometra lujae De Wild.	Fl.Gab.; Fl.Afr.Centr.	2B	9
Cynometra mannii Oliv.	Fl.Gab.; Fl.Afr.Centr.	2B	9
Cynometra nyangensis Pellegr.	Fl.Gab.	1A	81
Daniellia klainei Pierre ex A.Chev.	Fl.Gab.; Fl.Cam.	2B	9
Daniellia soyauxii (Harms) Rolfe	Fl.Gab.; Fl.Afr.Centr.	3B	3
Dialium angolense Welw. Ex Oliv.	Breteler, 1993	3B	3
Dialium bipindense Harms	Fl.Gab.; Rojo 1982	2B	9
Dialium dinklagei Harms	Fl.Gab.	4B	1
Dialium guineense Willd.	Breteler, 1993	3B	3
Didelotia africana Baill.	Fl.Gab.	2B	9
Didelotia brevipaniculata J.Léonard	Fl.Gab.; Fl.Cam.	3B	3
Distemonanthus benthamianus Baill.	Fl.Gab.	3B	3
Gilbertiodendron brachystegioides (Harms) J. Léonard	Fl.Gab.	2B	9
Gilbertiodendron ogooueense (Pellegr.) J. Léonard	Fl.Gab.	2B	9
Gilbertiodendron stipulaceum (Benth.) J. Léonard	Fl.Gab.	2B	9
Gilbertiodendron unijugum (Harms) J. Léonard	Fl.Gab	1B	27

Caesalpiniaceae (continued)	Reference	Biodiversity category	Biodiversity value
Griffonia physocarpa Baill.	Fl.Gab.	3B	3
Guibourtia ehie (A.Chev.) J.Léonard	Fl.Gab.; Fl.Cam.	3B	3
Guibourtia tessmannii (Harms) J.Léonard	Fl.Gab.	2B	9
Hylodendron gabunense Taub.	Fl.Gab.	3B	3
Hymenostegia floribunda (Benth.) Harms	Fl.Gab.;Fl. Afr.Centr.	2B	9
Hymenostegia klainei Pierre ex Pellegr.	Fl.Gab.	1B	27
Hymenostegia ngounyensis Pellegr.	Fl.Gab.	1B	27
Isomacrolobium conchyliophorum (Pellegr.) Aubrév. & Pellegr.	Fl.Gab.	1A	81
Julbernardia brieyi (De Wild.) Troupin	Fl.Gab.	2A	27
Librevillea klainei (Pierre ex Harms) Hoyle	Fl.Gab.	2B	9
Neochevalierodendron stephanii (A.Chev.) J. Léonard	Fl.Gab.	2B	9
Oddoniodendron micranthum (Harms) Baker	Fl.Gab.	2B	9
Plagiosiphon emarginatus (Hutch. & Dalz.) J. Léonard	Fl.Gab.	3B	3
Scorodophloeus zenkeri Harms	Fl.Gab.; Fl.Afr.Centr.	3B	3
Senna alata (L.) Roxburgh.	Fl.Gab.	5	1
Senna timoriensis (DC.) Irwin & Barneby	FTEA	(cult.)	–
Tetraberlinia bifoliolata (Harms) Hauman	Wieringa, 1999	2B	9
Tetraberlinia polyphylla (Harms) J.Léonard	Wieringa, 1999	1B	27

Combretaceae (8 species)	Reference	Biodiversity category	Biodiversity value
Combretum aphanopetalum Engl. & Diels	Fl.Gab.	3B	3
Combretum bracteatum (Laws.) Engl. & Diels	Fl.Gab.	4B	1
Combretum falcatum (Welw. ex Hiern) Jongk.	Fl.Gab.	4B	1
Combretum mannii Engl. & Diels	Fl.Gab.	3B	3
Combretum paniculatum Vent.	Fl.Gab.	5	1
Combretum rabiense Jongkind	Fl.Gab.	1B	27
Combretum racemosum P.Beauv.	Fl.Gab.	4B	1
Strephonema sericeum Hook.f.	Fl.Gab.; Jongkind, 1995	3B	3

Connaraceae (17 species)	Reference	Biodiversity category	Biodiversity value
Agelaea paradoxa Gilg	All are Jongkind & Lemmens, 1989	4B	1
Agelaea pentagyna (Lam.) Baill.		5	1
Agelaea poggeana Gilg		3B	3
Cnestis corniculata Lam.		5	1
Cnestis ferruginea Vahl ex DC.		4B	1
Connarus longistipitatus Gilg		4A	3
Hemandradenia mannii Stapf		4B	1
Jollydora duparquetiana (Baill.) Pierre		2B	9
Manotes expansa Sol. ex Planch.		4B	1
Manotes griffoniana Baill.		3B	3
Manotes macrantha (Gilg) Schellenb.		3B	3
Rourea minor (Gaertn.) Alston		5	1
Rourea myriantha Baill.		3B	3
Rourea obliquifoliolata Gilg		3B	3
Rourea parviflora Gilg		3B	3
Rourea solanderi Baker		4B	1
Rourea thomsonii (Baker) Jongkind		5	1

Dichapetalaceae (17 species)	Reference	Biodiversity category	Biodiversity value
Dichapetalum choristilum Engl.	Breteler, 1978	4B	1
Dichapetalum congoense Engl. & Ruhl.	Breteler, 1978	3B	3
Dichapetalum dewevrei De Wild. & Th.Dur.	Breteler, 1978	3B	3
Dichapetalum fructuosum Hiern	Breteler, 1978	4A	3
Dichapetalum gabonense Engl.	Breteler, 1979	2B	9
Dichapetalum glomeratum Engl.	Breteler, 1979	3B	3
Dichapetalum heudelotii (Planch. Ex Oliv.) Baill.	Breteler, 1979	4B	1
Dichapetalum insigne Engl.	Breteler, 1979	2B	9
Dichapetalum integripetalum Engl.	Breteler, 1979	2B	9
Dichapetalum lujae De Wild. & Th.Dur.	Breteler, 1979	3B	3
Dichapetalum madagascariense Poir.	Breteler, 1981	5	1
Dichapetalum melanocladum Breteler	Breteler, 1981	2B	9
Dichapetalum minutiflorum Engl. & Ruhl.	Breteler, 1981	2B	9
Dichapetalum parvifolium Engl.	Breteler, 1981	4B	1
Dichapetalum zenkeri Engl.	Breteler, 1982	4B	1
Dichapetalum spec. nov.	Breteler, verbal	1A	81
Tapura letestui Pellegr.	Breteler, 1986	1A	81

Melastomataceae (29 species)	Reference	Biodiversity category	Biodiversity value
Amphiblemma ciliatum Cogn.	Fl.Gab.	3B	3
Amphiblemma molle Hook.f.	Fl.Gab.	2B	9
Amphiblemma setosum Hook.f.	Fl.Gab.	1B	27
Calvoa hirsuta Hook.f.	Jacq.-Fél., 1981	4B	1
Calvoa orientalis Taub.	Jacq.-Fél., 1981	4B	1
Calvoa pulcherrima Gilg ex Engl.	Jacq.-Fél., 1981	2B	9
Calvoa seretii De Wild.	Jacq.-Fél., 1981	3B	3
Cincinnobotrys acaulis (Cogn.) Gilg	Jacq.-Fél., 1976	3A	9
Dicellandra barteri Hook.f.	Fl.Gab.	3B	3
Dicellandra descoingsii Jacq.-Fél.	Fl.Gab.	1B	27
Dinophora spenneroides Benth.	Fl.Gab.; Fl.Cam.	4B	1
Dissotis brazzae Cogn.	Fl.Gab.	4B	1
Dissotis congolensis (Cogn. ex Buettn.) Jacq.-Fél.	Fl.Gab.	5	1
Dissotis multiflora (Sm.) Triana	Fl.Gab.	3B	3
Heterotis decumbens (P.Beauv.) Jacq.-Fél.	Fl.Gab.; Fl.Cam.	4B	1
Medinilla mannii Hook.f.	Fl.Gab.	3A	9
Medinilla mirabilis (Gilg) Jacq.-Fél.	Fl.Gab.; Fl.Cam.	3B	3
Memecylon calophyllum Gilg	Fl.Gab.; Fl.Cam.	2B	9
Memecylon collinum Jacq.-Fél.	Fl.Gab.; Jacq.-Fél., 1979	2A	27
Memecylon klaineanum Jacq.-Fél.	Fl.Gab.; Jacq.-Fél., 1979	2B	9
Memecylon lateriflorum (G.Don) Bremek.	Fl.Gab.; FWTA	3B	3
Memecylon salicifolium Jacq.-Fél.	Fl.Gab.	1A	81
Preussiella kamerunensis Gilg	Fl.Gab.	3B	3
Tristemma oreophilum Gilg	Fl.Gab.	3A	9
Tristemma vestitum Jacq.-Fél.	Jacq.-Fél., 1986	1A	81
Warneckea cauliflora Jacq.-Fél.	Fl.Gab.	1A	81
Warneckea floribunda Jacq.-Fél.	Fl.Gab.	3B	3
Warneckea membranifolia (Hook.f.) Jacq.-Fél.	Fl.Gab.; Fl.Cam.	4B	1
Warneckea sapinii (De Wild.) Jacq.-Fél.	Fl.Gab.	3A	9

Mimosaceae (19 species)	Reference	Biodiversity category	Biodiversity value
Acacia auriculiformis A.Cunn. ex Benth.	Fl.Gab.	(cult.)	–
Aubrevillea platycarpa Pellegr.	Fl.Gab.	3B	3
Calpocalyx brevifolius Villiers	Villiers, 1984	1A	81
Calpocalyx dinklagei Harms	Villiers, 1984	2B	9
Calpocalyx heitzii Pellegr.	Villiers, 1984	2B	9
Cylicodiscus gabonensis Harms	Fl.Gab.	3B	3
Dichrostachys cinerea (L.) Wight & Arn.	Fl.Gab.	5	1
Entada gigas (L.) Fawcett & Rendle	Fl.Gab.	5	1
Fillaeopsis discophora Harms	Fl.Gab.	3B	3
Mimosa pigra L.	Fl.Gab.	5	1
Newtonia griffoniana (Baill.) Bak.f.	Villiers, 1990	3B	3
Newtonia leucocarpa (Harms) Gilbert & Boutique	Villiers, 1990	3B	3
Parkia bicolor A.Chev.	Fl.Gab.	4B	1
Parkia filicoidea Welw. ex Oliv.	Fl.Gab.	4B	1
Pentaclethra eetveldeana De Wild. & Th.Dur.	Fl.Gab.	2B	9
Pentaclethra macrophylla Benth.	Fl.Gab.	4B	1
Piptadeniastrum africanum (Hook.f.) Brenan	Fl.Gab.	4B	1
Pseudoprosopis gilletii (De Wild.) Villiers	Fl.Gab.	2B	9
Tetrapleura tetraptera (Schum. & Thonn.) Taub.	Fl.Gab.	5	1

Orchidaceae (28 species)	Reference	Biodiversity category	Biodiversity value
Ancistrorhynchus capitatus (Lindl.) Summerh.	Fl.Afr.Centr.	4B	1
Ancistrorhynchus recurvus Finet	Fl.Afr.Centr.	4A	3
Angraecum podochiloides Schltr.	Fl.Afr.Centr.	4B	1
Bulbophyllum intertextum Lindl.	Fl.Afr.Centr.	5	1
Bulbophyllum ivorense Cribb & Perez-Vera	Fl.Afr.Centr.	4A	3
Bulbophyllum oreonastes Rchb.f.	Fl.Afr.Centr.	5	1
Bulbophyllum pumilum (Sw.) Lindl.	Fl.Afr.Centr.	4B	1
Bulbophyllum saltatorium Lindl.	Fl.Afr.Centr.	4B	1
Calyptrochilum christyanum (Rchb.f.) Summerh.	Fl.Afr.Centr.	5	1
Chamaeangis ichneumonea (Lindl.) Schltr.	FWTA	3B	3
Cynorkis debilis (Hook.f.) Summerh.	Fl.Afr.Centr.; Fl.Cam.	4B	1
Cyrtorchis ringens (Rchb.f.) Summerh.	Fl.Afr.Centr.	5	1
Diaphananthe bidens (Sw.) Schltr.	Fl.Afr.Centr.	4B	1
Diaphananthe rutila (Rchb.f.) Summerh.	Fl.Afr.Centr.	5	1
Eulophia euglossa Rchb.f.	Fl.Afr.Centr.	4B	1
Habenaria stenochila Lindl.	Fl.Cam.	2A	27
Liparis tridens Kraenzl.	FWTA; FTEA	4A	3
Listrostachys pertusa (Lindl.) Rchb.f.	FWTA	3B	3
Manniella gustavii Rchb.f.	Fl.Afr.Centr.	5	1
Microcoelia microglossa Summerh.	Fl.Afr.Centr.	3B	3
Polystachya concreta (Jacq.) Garey & Sweet	Fl.Afr.Centr.	5	1
Polystachya paniculata (Sw.) Rolfe	Fl.Afr.Centr.	4B	1
Polystachya polychaete Kraenzl.	FTEA	5	1

Orchidaceae (continued)	Reference	Biodiversity category	Biodiversity value
Polystachya seticaulis Rendle	Fl.Afr.Centr.	3B	3
Summerhaysia laurentii (De Wild.) Cribb	Fl.Afr.Centr.; FWTA	4A	3
Tridactyle anthomaniaca (Rchb.f.) Summerh.	Fl.Afr.Centr.	5	1
Zeuxine elongata Rolfe	Fl.Afr.Centr.	5	1
Zeuxine occidentalis (Summerh.) Geerinck	Fl.Afr.Centr.	4B	1

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Appendix C

Plot Data

Plot 1: March 23, 2000; 2°17′S, 10°30′E; alt. 100 m; terrain flat, well-drained; canopy at ± 40 m, with *Celtis, Cylicodiscus, Dialium, Plagiostyles* and *Staudtia*; sub-canopy dominated by *Cola flavovelutina* and *Meiocarpidium lepidotum*; understory open.

Species (22)	Family (16)	Number of stems (64)
Annickia chlorantha	Annonaceae	1
Meiocarpidium lepidotum	Annonaceae	18
Xylopia hypolampra	Annonaceae	1
Picralima nitida	Apocynaceae	1
Dacryodes edulis	Burseraceae	1
Dialium angolense	Caesalpiniaceae	3
Diospyros dendo	Ebenaceae	2
Diospyros fragrans	Ebenaceae	1
Diospyros piscatoria	Ebenaceae	1
Dichostemma glaucescens	Euphorbiaceae	3

Plagiostyles africana	Euphorbiaceae	3
Trichilia sp. 1	Meliaceae	1
Calpocalyx dinklagei	Mimosaceae	2
Cylicodiscus gabonensis	Mimosaceae	1
Staudtia kamerunensis	Myristicaceae	4
Coula edulis	Olacaceae	3
Schumanniophyton hirsutum	Rubiaceae	1
Zanthoxylum gilletii	Rutaceae	1
Gambeya africana	Sapotaceae	1
Cola flavovelutina	Sterculiaceae	11
Grewia coriacea	Tiliaceae	1
Celtis tessmannii	Ulmaceae	3

Plot 2: March 24, 2000; 2°17′S, 10°30′E; alt. 100 m; terrain flat, swampy; canopy at ± 45 m, with *Berlinia bracteosa, Calpocalyx heitzii, Hallea ledermannii* and *Sterculia tragacantha*; sub-canopy dominated by *Anthonotha macrophylla, Diospyros physocalycina* and three species of *Cola*; understory open.

Species (30)	**Family (11)**	**Number of stems (106)**
Meiocarpidium lepidotum	Annonaceae	1
Uvariastrum pierreanum	Annonaceae	3
Anthonotha macrophylla	Caesalpiniaceae	22
Berlinia bracteosa	Caesalpiniaceae	4
Dialium angolense	Caesalpiniaceae	2
Didelotia africana	Caesalpiniaceae	3
Gilbertiodendron unijugum	Caesalpiniaceae	3
Diospyros gabunensis	Ebenaceae	1
Diospyros iturensis	Ebenaceae	1
Diospyros physocalycina	Ebenaceae	15
Diospyros sp. 1	Ebenaceae	2
Drypetes ituriensis (cf.)	Euphorbiaceae	1
Drypetes molunduana (cf.)	Euphorbiaceae	1
Mareya micrantha	Euphorbiaceae	1
Homalium letestui	Flacourtiaceae	1
Oncoba glauca	Flacourtiaceae	1
Anthocleista vogelii	Loganiaceae	2
Carapa procera	Meliaceae	3
Khaya ivorensis	Meliaceae	1
Trichilia monodelpha	Meliaceae	2
Trichilia prieureana	Meliaceae	3
Calpocalyx dinklagei	Mimosaceae	12
Calpocalyx heitzii	Mimosaceae	2
Baphia leptostemma (cf.)	Papilonaceae	1
Hallea ledermannii	Rubiaceae	4
Heinsia crinita	Rubiaceae	1
Cola flavovelutina	Sterculiaceae	3
Cola griseiflora (cf.)	Sterculiaceae	3
Cola lateritia	Sterculiaceae	5
Sterculia tragacantha	Sterculiaceae	2

Plot 3: March 25, 2000; 2°14′S, 10°27′E; alt. 150 m; terrain with slight inclination, well-drained soil; canopy at ± 35 m, with *Parkia filicoidea, Petersianthus macrocarpus*

and *Staudtia gabonensis*; sub-canopy with abundance of *Dichostemma glaucescens* and *Diospyros* spp.; understory open.

Species (27)	Family (13)	Number of stems (97)
Greenwayodendron suaveolens	Annonaceae	1
Meiocarpidium lepidotum	Annonaceae	6
Crudia sp. 1	Caesalpiniaceae	1
Cynometra lujae (cf.)	Caesalpiniaceae	3
Dialium angolense	Caesalpiniaceae	1
Neochevalierodendron stephanii	Caesalpiniaceae	1
Diospyros fragrans	Ebenaceae	1
Diospyros iturensis	Ebenaceae	7
Diospyros mannii	Ebenaceae	2
Diospyros obliquifolia	Ebenaceae	2
Diospyros zenkeri	Ebenaceae	2
Diospyros sp. 2	Ebenaceae	4
Centroplacus glaucinus	Euphorbiaceae	1
Dichostemma glaucescens	Euphorbiaceae	43
Maprounea membranacea	Euphorbiaceae	1
Desbordesia glaucescens	Irvingiaceae	2
Petersianthus macrocarpus	Lecythidaceae	1
Trichilia sp. 1	Meliaceae	1
Parkia filicoidea	Mimosaceae	1
Pycnanthus angolensis	Myristicaceae	3
Staudtia kamerunensis	Myristicaceae	2
Coula edulis	Olacaceae	3
Diogoa zenkeri	Olacaceae	2
Pausinystalia macroceras	Rubiaceae	1
Tricalysia biafrana (cf.)	Rubiaceae	1
Chytranthus sp. 1	Sapindaceae	3
Cola griseiflora (cf.)	Sterculiaceae	1

Plot 4: March 27, 2000; 2°17.6′S, 10°30.3′E; alt. 150 m; terrain almost flat, slight inclination in one corner, well-drained soil; canopy at 35–40 m, with *Celtis tessmannii, Pentaclethra eetveldiana, Pterocarpus soyauxii* and *Scorodophloeus zenkeri*; sub-canopy dominated by several *Diospyros* species, *Nesogordonia papaverifera* and *Diogoa zenkeri*; understory open.

Species (27)	Family (16)	Number of stems (76)
Thomandersia sp. 1	Acanthaceae	4
Meiocarpidium lepidotum	Annonaceae	2
Uvariastrum pierreanum	Annonaceae	2
Dacryodes letestui	Burseraceae	1
Anthonotha sp. 1	Caesalpiniaceae	1
Berlinia confusa	Caesalpiniaceae	1
Cynometra nyangensis (cf.)	Caesalpiniaceae	1
Dialium angolense	Caesalpiniaceae	1
Scorodophloeus zenkeri	Caesalpiniaceae	4
Diospyros dendo	Ebenaceae	14
Diospyros fragrans	Ebenaceae	1
Diospyros hoyleana	Ebenaceae	3
Diospyros iturensis	Ebenaceae	13

Discoglypremna caloneura	Euphorbiaceae	1
Drypetes ituriensis (cf.)	Euphorbiaceae	1
Plagiostyles africana	Euphorbiaceae	1
Trichilia prieureana	Meliaceae	1
Pentaclethra eetveldeana	Mimosaceae	2
Staudtia kamerunensis	Myristicaceae	1
Diogoa zenkeri	Olacaceae	5
Pterocarpus soyauxii	Papilonaceae	2
Pausinystalia macroceras	Rubiaceae	3
Schumanniophyton hirsutum	Rubiaceae	1
Chytranthus sp. 1	Sapindaceae	1
Synsepalum longecuneatum	Sapotaceae	2
Nesogordonia papaverifera	Sterculiaceae	6
Celtis tessmannii	Ulmaceae	1

Plot 5 : April 7, 2000; 2°13′S, 10°24′E; alt. 380 m; terrain with inclination of ± 10° towards the east, well-drained soil; canopy at ± 40 m, with *Bikinia le-testui, Marquesia excelsa* and *Plagiosiphon emarginatus;* subcanopy without any distinct dominance; understory open.

Species (35)	**Family (16)**	**Number of stems (78)**
Trichoscypha acuminata	Anacardiaceae	1
Anisophyllea myriosticta	Anisophylleaceae	1
Anisophyllea polyneura	Anisophylleaceae	2
Anonidium mannii	Annonaceae	2
Uvariastrum pierreanum	Annonaceae	3
Dacryodes buettneri	Burseraceae	1
Santiria trimera	Burseraceae	6
Bikinia le-testui	Caesalpiniaceae	4
Dialium angolense	Caesalpiniaceae	1
Dialium guineense	Caesalpiniaceae	2
Plagiosiphon emarginatus	Caesalpiniaceae	7
Marquesia excelsa	Dipterocarpaceae	3
Diospyros melocarpa	Ebenaceae	4
Cleistanthus sp. 1	Euphorbiaceae	4
Cleistanthus sp. 2	Euphorbiaceae	2
Dichostemma glaucescens	Euphorbiaceae	1
Drypetes sp. 1	Euphorbiaceae	5
Klaineanthus gaboniae	Euphorbiaceae	6
Maprounea membranacea	Euphorbiaceae	1
Maprounea sp. 1	Euphorbiaceae	2
Carapa procera	Meliaceae	1
Coula edulis	Olacaceae	2
Diogoa zenkeri	Olacaceae	1
Heisteria zimmereri	Olacaceae	1
Strombosiopsis tetrandra	Olacaceae	1
Dactyladenia barteri	Rosaceae	1
Pausinystalia johimbe	Rubiaceae	1
Pausinystalia macroceras	Rubiaceae	1
Pausinystalia sp. 1	Rubiaceae	2
Deinbollia sp. 1	Sapindaceae	1
Eriocoelum sp. 1	Sapindaceae	1
Pancovia floribunda	Sapindaceae	3
Manilkara fouilloyana	Sapotaceae	1

Oubanguia africana	Scytopetalaceae	2
Cola rostrata	Sterculiaceae	1

Plot 6 : April 8, 2000; 2°13′S, 10°24′E; alt. 460 m; forest on ridge with steep slopes on either side; canopy at ± 30 m; abundance of *Dacryodes* spp., *Garcinia* spp., *Ochtocosmus calothyrsus* and *Santiria trimera*; understory fairly dense.

Species (41)	**Family (21)**	**Number of stems (106)**
Trichoscypha sp. 1	Anacardiaceae	1
Anonidium mannii	Annonaceae	1
Greenwayodendron suaveolens	Annonaceae	1
Xylopia sp. 1	Annonaceae	1
Aucoumea klaineana	Burseraceae	1
Dacryodes buettneri	Burseraceae	1
Dacryodes edulis	Burseraceae	1
Dacryodes igaganga	Burseraceae	5
Dacryodes klaineana	Burseraceae	2
Santiria trimera	Burseraceae	18
Daniellia klainei	Caesalpiniaceae	1
Dialium angolense	Caesalpiniaceae	2
Plagiosiphon emarginatus	Caesalpiniaceae	4
Tapura letestui	Dichapetalaceae	1
Diospyros melocarpa	Ebenaceae	4
Centroplacus glaucinus	Euphorbiaceae	4
Cleistanthus sp. 2	Euphorbiaceae	2
Cleistanthus sp. 3	Euphorbiaceae	1
Dichostemma glaucescens	Euphorbiaceae	3
Maesobotrya sp. 1	Euphorbiaceae	1
Maprounea membranacea	Euphorbiaceae	1
Homalium sp. 1	Flacourtiaceae	1
Garcinia conrauana	Guttiferae	2
Garcinia lucida	Guttiferae	7
Garcinia smeathmannii	Guttiferae	1
Ochtocosmus calothyrsus	Ixonanthaceae	6
Beilschmiedia dinklagei	Lauraceae	2
Warneckea sp. 1	Melastomataceae	1
Newtonia griffoniana	Mimosaceae	1
Lophira alata	Ochnaceae	1
Coula edulis	Olacaceae	1
Strombosia sp. 1	Olacaceae	2
Strombosiopsis tetrandra	Olacaceae	2
Pausinystalia johimbe	Rubiaceae	3
Rothmannia longiflora (cf.)	Rubiaceae	1
Rothmannia sp. 1	Rubiaceae	1
Zanthoxylum gilletii	Rutaceae	1
Pancovia floribunda	Sapindaceae	2
Manilkara fouilloyana	Sapotaceae	2
Scytopetalum klaineanum	Scytopetalaceae	1
Odyendyea gabonensis	Simaroubaceae	2

Plot 7: April 9, 2000; 2°14′S, 10°24′E; alt. 650 m; terrain sloping with 6–8° to the East, well-drained; canopy at ± 35 m; sub-canopy without any distinct dominant species; understory well-developed.

Species (40)	Family (20)	Number of stems (113)
Anisophyllea purpurascens	Anisophylleaceae	4
Anisophyllea purpurascens (cf.)	Anisophylleaceae	1
Anonidium mannii	Annonaceae	5
Anonidium sp. 1	Annonaceae	2
Xylopia sp. 1	Annonaceae	1
Xylopia staudtii	Annonaceae	2
Xylopia sp. 1	Apocynaceae	1
Dacryodes edulis	Burseraceae	1
Dacryodes sp. 1	Burseraceae	1
Santiria trimera	Burseraceae	6
Anthonotha ferruginea	Caesalpiniaceae	1
Baikiaea insignis	Caesalpiniaceae	3
Gilbertiodendron unijugum	Caesalpiniaceae	6
Scorodophloeus zenkeri	Caesalpiniaceae	4
Hemandradenia mannii	Connaraceae	1
Diospyros hoyleana	Ebenaceae	1
Diospyros melocarpa	Ebenaceae	4
Croton sylvaticus	Euphorbiaceae	1
Dichostemma glaucescens	Euphorbiaceae	5
Drypetes gilgiana	Euphorbiaceae	5
Klaineanthus gaboniae	Euphorbiaceae	3
Garcinia conrauana	Guttiferae	7
Garcinia smeathmannii	Guttiferae	13
Afrostyrax kamerunensis	Huaceae	1
Ochtocosmus calothyrsus	Ixonanthaceae	3
Beilschmiedia dinklagei	Lauraceae	1
Warneckea sp. 2	Melastomataceae	4
Calpocalyx dinklagei	Mimosaceae	3
Newtonia leucocarpa	Mimosaceae	2
Eugenia sp. 1	Myrtaceae	1
Strombosia scheffleri	Olacaceae	6
Strombosiopsis tetrandra	Olacaceae	6
Dactyladenia sp. 1	Rosaceae	1
Rothmannia longifolia (cf.)	Rubiaceae	1
Rothmannia sp. 2	Rubiaceae	1
Eriocoelum sp. 2	Sapindaceae	1
Chrysophyllum sp. 1	Sapotaceae	1
Letestua durissima	Sapotaceae	1
Zeyherella letestui	Sapotaceae	1
Zeyherella mayombense	Sapotaceae	1

Plot 8: April 10, 2000; 2°13′S, 10°24′E; alt. 350 m; terrain sloping ± 10° to the north-east, well-drained; canopy at ± 40 m; sub-canopy without any distinct dominant species; understory well-developed.

Species (35)	Family (16)	Number of stems (80)
Anisophyllea purpurascens	Anisophylleaceae	1

Anonidium mannii	Annonaceae	6
Greenwayodendron suaveolens	Annonaceae	2
Greenwayodendron sp. 2	Annonaceae	1
Uvariastrum pierreanum	Annonaceae	1
Dacryodes edulis	Burseraceae	2
Dacryodes klaineana	Burseraceae	1
Santiria trimera	Burseraceae	9
Berlinia sp. 1	Caesalpiniaceae	1
Copaifera religiosa	Caesalpiniaceae	1
Dialium guineense	Caesalpiniaceae	3
Gilbertiodendron sp. 1	Caesalpiniaceae	1
Tetraberlinia polyphylla	Caesalpiniaceae	2
Diospyros cinnabarina	Ebenaceae	3
Diospyros zenkeri	Ebenaceae	1
Cyrtogonone argentea	Euphorbiaceae	1
Dichostemma glaucescens	Euphorbiaceae	6
Drypetes sp. 1	Euphorbiaceae	1
Plagiostyles africana	Euphorbiaceae	1
Scottellia klaineana	Flacourtiaceae	2
Klainedoxa gabonensis	Irvingiaceae	1
Guarea thompsonii	Meliaceae	1
Syzygium staudtii (cf.)	Myrtaceae	1
Coula edulis	Olacaceae	5
Diogoa zenkeri	Olacaceae	7
Heisteria zimmereri	Olacaceae	5
Strombosia pustulata	Olacaceae	1
Strombosia scheffleri	Olacaceae	2
Strombosiopsis tetrandra	Olacaceae	1
Magnistipula sp. 1	Rosaceae	1
Corynanthe mayumbensis	Rubiaceae	1
Araliopsis soyauxii	Rutaceae	1
Pancovia floribunda	Sapindaceae	2
Pancovia sp. 1	Sapindaceae	4
Scytopetalum sp. 1	Scytopetalaceae	1

Plot 9: May 14, 2000; 2°27.6′S, 10°32.5′E; alt. 195 m; level, rocky terrain, well-drained; canopy at ± 40 m; sub-canopy with abundance of *Dichostemma glaucescens*; understory dense.

Species (17)	**Family (13)**	**Number of stems (51)**
Sorindeia sp. 1	Anacardiaceae	1
Dacryodes sp. 2	Burseraceae	1
Cynometra sp. 1	Caesalpiniaceae	1
Gilbertiodendron brachystegioides	Caesalpiniaceae	1
Diospyros fragrans	Ebenaceae	4
Dichostemma glaucescens	Euphorbiaceae	22
Scottellia klaineana	Flacourtiaceae	1
Trichilia prieureana	Meliaceae	1
Pentaclethra eetveldeana	Mimosaceae	1
Staudtia kamerunensis	Myristicaceae	5
Pinacopodium congolense	Nectaropetaceae	3
Coula edulis	Olacaceae	1
Diogoa zenkeri	Olacaceae	4
Strombosia pustulata	Olacaceae	2

Ximenia americana ?	Olacaceae	1
Maranthes glabra	Rosaceae	1
Pancovia floribunda	Sapindaceae	1

Plot 10: May 15, 2000; 2°27.4′S, 10°32.0′E; alt. 535 m; top of a ridge; canopy at ± 35 m; sub-canopy with abundance of *Santiria trimera*; understory open.

Species (32)	**Family (17)**	**Number of stems (89)**
Anisophyllea purpurascens	Anisophylleaceae	2
Anonidium mannii	Annonaceae	1
Greenwayodendron suaveolens	Annonaceae	1
Greenwayodendron sp. 3	Annonaceae	2
Dacryodes klaineana	Burseraceae	4
Santiria trimera	Burseraceae	20
Anthonotha ferruginea	Caesalpiniaceae	5
Aphanocalyx heitzii	Caesalpiniaceae	1
Dialium angolense	Caesalpiniaceae	2
Scorodophloeus zenkeri	Caesalpiniaceae	1
Diospyros fragrans	Ebenaceae	1
Diospyros hoyleana	Ebenaceae	5
Diospyros melocarpa	Ebenaceae	1
Dichostemma glaucescens	Euphorbiaceae	2
Plagiostyles africana	Euphorbiaceae	1
Uapaca staudtii (cf.)	Euphorbiaceae	1
Homalium sp. 2	Flacourtiaceae	5
Scottellia klaineana	Flacourtiaceae	1
Garcinia conrauana	Guttiferae	1
Ochtocosmus calothyrsus	Ixonanthaceae	3
Beilschmiedia sp. 1	Lauraceae	3
Warneckea floribunda (cf.)	Melastomataceae	8
Calpocalyx sp. 1	Mimosaceae	6
Fillaeopsis discophora	Mimosaceae	1
Newtonia leucocarpa	Mimosaceae	1
Strombosia pustulata	Olacaceae	1
Strombosiopsis tetrandra	Olacaceae	3
Dactyladenia sp. 2	Rosaceae	1
Maranthes glabra	Rosaceae	2
Oubanguia africana	Scytopetalaceae	1
Odyendyea gabonensis	Simaroubaceae	1
Nesogordonia sp. 1	Sterculiaceae	1

Plot 11: May 16, 2000; alt. 430 m; terrain on a ± 8° slope, well-drained soil; canopy at ± 40 m; sub-canopy with dominance of *Dichostemma glaucescens, Diospyros* spp. and *Maprounea membranacea*; understory fairly dense.

Species (26)	**Family (14)**	**Number of stems (107)**
Sorindeia grandifolia (cf)	Anacardiaceae	3
Greenwayodendron suaveolens	Annonaceae	3
Xylopia aethiopica	Annonaceae	3
Xylopia sp. 2	Annonaceae	1
Hunteria umbellata	Apocynaceae	4
Dacryodes buettneri	Burseraceae	1

Dacryodes klaineana	Burseraceae	1
Santiria trimera	Burseraceae	5
Dialium angolense	Caesalpiniaceae	3
Dialium dinklagei	Caesalpiniaceae	1
Librevillea klainei	Caesalpiniaceae	6
Diospyros fragrans	Ebenaceae	7
Diospyros hoyleana	Ebenaceae	10
Diospyros melocarpa	Ebenaceae	5
Dichostemma glaucescens	Euphorbiaceae	20
Klaineanthus gaboniae	Euphorbiaceae	1
Maprounea membranacea	Euphorbiaceae	14
Homalium sp. 2	Flacourtiaceae	1
Newtonia leucocarpa	Mimosaceae	1
Strombosia pustulata	Olacaceae	2
Dactyladenia barteri	Rosaceae	3
Dactyladenia sp. 3	Rosaceae	1
Dactyladenia sp. 1	Rubiaceae	5
Pancovia floribunda	Sapindaceae	4
Pancovia sp. 2	Sapindaceae	1
Zeyherella letestui	Sapotaceae	1

Plot 12: May 17, 2000; 2°28′S, 10°32′E; alt. 145 m; terrain slightly sloping, well-drained soil; canopy at ± 50 m; sub-canopy without obvious dominance; understory fairly dense with dominance of an *Ixora* sp. and *Phyllanthus diandrus*.

Species (29)	**Family (14)**	**Number of stems (52)**
Thomandersia hensii	Acanthaceae	4
Sorindeia sp. 2	Anacardiaceae	1
Trichoscypha acuminata	Anacardiaceae	2
Dacryodes edulis	Burseraceae	1
Dacryodes sp. 3	Burseraceae	1
Santiria trimera	Burseraceae	4
Cynometra sp. 2	Caesalpiniaceae	2
Dialium angolense	Caesalpiniaceae	2
Dialium dinklagei	Caesalpiniaceae	1
Distemonanthus benthamianus	Caesalpiniaceae	1
Diospyros fragrans	Ebenaceae	1
Diospyros sp. 3	Ebenaceae	2
Margaritaria discoideus	Euphorbiaceae	1
Plagiostyles africana	Euphorbiaceae	2
Uapaca guineensis	Euphorbiaceae	1
Garcinia sp. 1	Guttiferae	1
Desbordesia glaucescens	Irvingiaceae	1
Irvingia gabonensis	Irvingiaceae	1
Parkia bicolor	Mimosaceae	1
Coula edulis	Olacaceae	9
Diogoa zenkeri	Olacaceae	2
Heisteria zimmereri	Olacaceae	4
Strombosiopsis tetrandra	Olacaceae	1
Angylocalyx sp. 1	Papilionaceae	1
Pausinystalia macroceras	Rubiaceae	1
Chytranthus sp. 2	Sapindaceae	1
Ganophyllum giganteum	Sapindaceae	1
Pancovia floribunda	Sapindaceae	1

Vitex gabonensis (cf)	Verbenaceae	1

Plot 13: May 18, 2000; 2°27.6′S, 10°32.5′E; alt. 265 m; terrain level, well-drained; canopy at ± 45 m; sub-canopy dominated by *Dichostemma glaucescens*; understory fairly dense with dominance of *Coula edulis, Diospyros obliquifolia, Dichostemma glaucescens, Strombosia pustulata* and *Entada gigas*.

Species (27)	**Family (16)**	**Number of stems (103)**
Thomandersia hensii	Acanthaceae	1
Sorindeia sp. 1	Anacardiaceae	1
Trichoscypha acuminata	Anacardiaceae	1
Isolona campanulata	Annonaceae	1
Dacryodes edulis	Burseraceae	4
Dacryodes klaineana	Burseraceae	2
Santiria trimera	Burseraceae	2
Bobgunnia fistuloides	Caesalpiniaceae	1
Cynometra sp. 2	Caesalpiniaceae	5
Dialium angolense	Caesalpiniaceae	3
Guibourtia tessmannii	Caesalpiniaceae	1
Diospyros fragrans	Ebenaceae	1
Dichostemma glaucescens	Euphorbiaceae	52
Scottellia klaineana	Flacourtiaceae	2
Desbordesia glaucescens	Irvingiaceae	2
Beilschmiedia oblongifolia (cf)	Lauraceae	1
Pentaclethra eetveldeana	Mimosaceae	2
Staudtia kamerunensis	Myristicaceae	1
Coula edulis	Olacaceae	3
Diogoa zenkeri	Olacaceae	4
Strombosia pustulata	Olacaceae	1
Strombosia scheffleri	Olacaceae	1
Maranthes glabra	Rosaceae	1
Ganophyllum giganteum	Sapindaceae	1
Pancovia floribunda	Sapindaceae	6
Chrysophyllum subnudum	Sapotaceae	2
Gambeya africana	Sapotaceae	1

Plot 14: May 19, 2000; 2°28.0′S, 10°32.5′E; alt. 150 m; terrain level, swampy soil; canopy at ± 25 m; understory fairly dense, dominated by *Greenwayodendron suaveolens, Salacia* sp., *Thomandersia hensii* and *Tricalysia* sp. 1.

Species (39)	**Family (22)**	**Number of stems (71)**
Thomandersia hensii	Acanthaceae	2
Lannea welwitschii	Anacardiaceae	1
Pseudospondias longifolia	Anacardiaceae	1
Xylopia quintasii	Annonaceae	1
Newbouldia laevis	Bignoniaceae	1
Dacryodes igaganga	Burseraceae	1
Dialium dinklagei	Caesalpiniaceae	1
Diospyros dendo	Ebenaceae	3
Diospyros mannii	Ebenaceae	1
Dichostemma glaucescens	Euphorbiaceae	1
Margaritaria discoideus	Euphorbiaceae	2

Uapaca guineensis	Euphorbiaceae	1
Lasianthera africana	Icacinaceae	1
Desbordesia glaucescens	Irvingiaceae	2
Irvingia gabonensis	Irvingiaceae	3
Irvingia grandifolia	Irvingiaceae	2
Carapa procera	Meliaceae	1
Trichilia prieureana	Meliaceae	1
Pentaclethra eetveldeana	Mimosaceae	4
Pentaclethra macrophylla	Mimosaceae	1
Myrianthus arboreus	Moraceae	1
Coula edulis	Olacaceae	1
Diogoa zenkeri	Olacaceae	9
Heisteria zimmereri	Olacaceae	1
Strombosia grandifolia	Olacaceae	5
Strombosia pustulata	Olacaceae	1
Ximenia americana	Olacaceae	1
Pterocarpus soyauxii	Papilonaceae	1
Barteria fistulosa	Passifloraceae	1
Maranthes glabra	Rosaceae	1
Aoranthe cladantha	Rubiaceae	1
Pausinystalia macroceras	Rubiaceae	1
Pausinystalia sp. 3	Rubiaceae	1
Tricalysia sp. 1	Rubiaceae	6
Vangueropsis rubiginosa	Rubiaceae	1
Eriocoelum sp. 3	Sapindaceae	4
Gambeya africana	Sapotaceae	2
Scytopetalum klaineanum	Scytopetalaceae	1
Cola sp. 1	Sterculiaceae	1

Plot 15: May 29, 2000; 2°23.1′S, 10°30.7′E; alt. 545 m; forest on ridge, terrain slightly sloping, well-drained soil; canopy at ± 30 m, with *Aphanocalyx microphyllus* and *Odyendyea gabonensis* as large emergents; sub-canopy dominated by *Dichostemma glaucescens* and *Synsepalum longecuneatum*; understory fairly dense.

Species (40)	**Family (22)**	**Number of stems (104)**
Trichoscypha acuminata	Anacardiaceae	1
Trichoscypha sp. 2	Anacardiaceae	1
Trichoscypha sp. 3	Anacardiaceae	1
Anisophyllea polyneura	Anisophylleaceae	3
Anonidium mannii	Annonaceae	6
Isolona zenkeri	Annonaceae	1
Tabernaemontana crassa	Apocynaceae	1
Dacryodes klaineana	Burseraceae	1
Santiria trimera	Burseraceae	10
Anthonotha fragrans	Caesalpiniaceae	1
Aphanocalyx microphyllus	Caesalpiniaceae	4
Berlinia confusa	Caesalpiniaceae	1
Daniellia klainei	Caesalpiniaceae	1
Guibourtia ehie	Caesalpiniaceae	1
Strephonema sericeum	Combretaceae	1
Diospyros dendo	Ebenaceae	1
Diospyros melocarpa	Ebenaceae	1
Dichostemma glaucescens	Euphorbiaceae	17
Klaineanthus gabonie	Euphorbiaceae	1

Oncoba flagelliflora (cf)	Flacourtiaceae	1
Beilschmiedia sp. 1	Lauraceae	1
Beilschmiedia sp. 2	Lauraceae	6
Memecylon sp. 1	Melastomataceae	1
Warneckea sapinii	Melastomataceae	2
Carapa procera	Meliaceae	2
Guarea sp. 1	Meliaceae	1
Pentaclethra eetveldeana	Mimosaceae	1
Syzygium staudtii	Myrtaceae	1
Coula edulis	Olacaceae	3
Diogoa zenkeri	Olacaceae	2
Strombosia pustulata	Olacaceae	2
Strombosiopsis tetrandra	Olacaceae	3
Psychotria sp. 1	Rubiaceae	1
Psychotria sp. 4	Rubiaceae	1
Deinbollia sp. 2	Sapindaceae	2
Synsepalum longecuneatum	Sapotaceae	13
Odyendyea gabonensis	Simaroubaceae	4
Cola lateritia	Sterculiaceae	1
Nesogordonia papaverifera	Sterculiaceae	1
Grewia coriacea	Tiliaceae	1

Plot 16: May 30, 2000; 2°24.4′S, 10°27.1′E; alt. 655 m; forest on hilltop, lots of mosses and epiphytes on trees, well-drained soil; canopy at 20–25 m, with *Eugenia* sp. 2, *Protomegabaria* sp. 1 and *Santiria trimera*; sub-canopy dominated by *Berlinia* sp. 2, *Dacryodes edu*lis and *Strombosiopsis tetrandra;* understory fairly dense.

Species (40)	**Family (22)**	**Number of stems (114)**
Sorindeia sp. 3	Anacardiaceae	1
Trichoscypha sp. 4	Anacardiaceae	4
Anisophyllea purpurascens	Anisophylleaceae	2
Hunteria umbellata	Apocynaceae	3
Hunteria sp. 2	Apocynaceae	3
Dacryodes edulis	Burseraceae	6
Dacryodes igaganga	Burseraceae	1
Dacryodes macrophylla (cf)	Burseraceae	1
Santiria trimera	Burseraceae	13
Anthonotha fragrans	Caesalpiniaceae	3
Berlinia sp. 2	Caesalpiniaceae	10
Dialium dinklagei	Caesalpiniaceae	4
Strephonema sericeum	Combretaceae	1
Hemandradenia mannii	Connaraceae	1
Diospyros piscatoria	Ebenaceae	1
Diospyros sp. 4	Ebenaceae	1
Drypetes ituriensis (cf)	Euphorbiaceae	1
Klaineanthus gaboniae	Euphorbiaceae	2
Maesobotrya sp. 2	Euphorbiaceae	1
Protomegabaria sp. 1	Euphorbiaceae	1
Uapaca guineensis	Euphorbiaceae	2
Oncoba sp. 1	Flacourtiaceae	9
Garcinia smeathmannii	Guttiferae	2
Beilschmiedia sp. 3	Lauraceae	1
Beilschmiedia sp. 4	Lauraceae	1
Memecylon sp. 2	Melastomataceae	1

Warneckea sapinii	Melastomataceae	1
Parkia bicolor	Mimosaceae	1
Eugenia sp. 2	Myrtaceae	9
Strombosia scheffleri	Olacaceae	4
Strombosiopsis tetrandra	Olacaceae	7
Barteria nigritana	Passifloraceae	1
Psychotria sp. 1	Rubiaceae	1
Tarenna lasiorachis	Rubiaceae	1
Tricalysia pallens	Rubiaceae	1
Pancovia sp. 2	Sapindaceae	2
Synsepalum longecuneatum	Sapotaceae	5
Vitex sp. 1	Verbenaceae	3
Decorsella paradoxa	Violaceae	2

Plot 17: June 1, 2000; 2°22.5′S, 10°29.8′E; alt. 225 m; terrain level, swampy; canopy at ± 35 m, with *Irvingia gabonensis, Pentaclethra eetveldeana* and *Strombosiopsis tetrandra*; sub-canopy dominated by *Diospyros dendo, Grewia coriacea* and *Strombosia grandifolia*; understory fairly dense, with lots of lianas.

Species (38)	**Family (20)**	**Number of stems (88)**
Thomandersia hensii	Acanthaceae	4
Sorindeia sp. 4	Anacardiaceae	1
Annickia chlorantha	Annonaceae	1
Greenwayodendron suaveolens	Annonaceae	1
Uvariastrum pierreanum	Annonaceae	1
Xylopia quintasii	Annonaceae	1
Santiria trimera	Burseraceae	2
Berlinia bracteosa	Caesalpiniaceae	1
Dialium angolense	Caesalpiniaceae	2
Dialium dinklagei	Caesalpiniaceae	2
Guibourtia ehie	Caesalpiniaceae	2
Dichapetalum sp. 1	Dichapetalaceae	1
Diospyros dendo	Ebenaceae	6
Diospyros sp. 5	Ebenaceae	1
Dichostemma glaucescens	Euphorbiaceae	11
Mareya micrantha	Euphorbiaceae	1
Uapaca heudelotii	Euphorbiaceae	1
Garcinia ovalifolia	Guttiferae	1
Irvingia gabonensis	Irvingiaceae	7
Klainedoxa gabonensis	Irvingiaceae	1
Petersianthus macrocarpus	Lecythidaceae	1
Trichilia prieureana	Meliaceae	1
Pentaclethra eetveldeana	Mimosaceae	2
Myrianthus serratus	Moraceae	1
Syzygium staudtii	Myrtaceae	1
Coula edulis	Olacaceae	2
Diogoa zenkeri	Olacaceae	4
Heisteria zimmereri	Olacaceae	2
Strombosia grandifolia	Olacaceae	4
Strombosia pustulata	Olacaceae	4
Strombosiopsis tetrandra	Olacaceae	4
Corynanthe mayombensis	Rubiaceae	1
Massularia acuminata	Rubiaceae	1
Pausinystalia macroceras	Rubiaceae	1

Psydrax arnoldiana	Rubiaceae	1
Placodiscus opacus	Sapindaceae	1
Cola altissima	Sterculiaceae	1
Grewia coriacea	Tiliaceae	12

Plot 18: June 2, 2000; 2°23.0′S, 10°29.5′E; alt. 230 m; terrain slightly sloping, well-drained soil; canopy at ± 40 m; sub-canopy dominated by *Dichostemma glaucescens* and *Strombosia pustulata;* understory open.

Species (30)	**Family (15)**	**Number of stems (96)**
Thomandersia hensii	Acanthaceae	2
Uvariastrum pierreanum	Annonaceae	1
Santiria trimera	Burseraceae	1
Dialium angolense	Caesalpiniaceae	1
Guibourtia ehie	Caesalpiniaceae	1
Hylodendron gabunense	Caesalpiniaceae	1
Diospyros dendo	Ebenaceae	6
Diospyros piscatoria	Ebenaceae	1
Centroplacus glaucinus	Euphorbiaceae	1
Dichostemma glaucescens	Euphorbiaceae	42
Plagiostyles africana	Euphorbiaceae	1
Hua gabonii	Huaceae	1
Desbordesia glaucescens	Irvingiaceae	1
Entandrophragma congolensis	Meliaceae	1
Trichilia prieureana	Meliaceae	3
Cylicodiscus gabonensis	Mimosaceae	1
Pentaclethra eetveldeana	Mimosaceae	1
Piptadeniastrum africanum	Mimosaceae	1
Coula edulis	Olacaceae	2
Strombosia pustulata	Olacaceae	12
Paropsiopsis	Passifloraceae	1
Pausinystalia johimbe	Rubiaceae	1
Pausinystalia macroceras	Rubiaceae	1
Rothmannia liebrechtsiana	Rubiaceae	2
Schumanniophyton hirsutum	Rubiaceae	1
Tarenna jolinonii	Rubiaceae	1
Chytranthus macrobotrys	Sapindaceae	1
Chytranthus talbotii	Sapindaceae	1
Placodiscus opacus	Sapindaceae	4
Synsepalum longecuneatum	Sapotaceae	2

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